Written by Michael Striem

Partial list of literature and publications relevant to our manuscript (first draft):

🏛️ Classical & Historical Philosophers

1. **Heraclitus (c. 500 BCE)**
    - Taught that *"all things flow"* — existence is a constant transformation of energy and matter, a kind of eternal exchange between opposites (life/death, order/chaos).
    - His notion of the *Logos* as the ordering principle of the universe aligns with our "universal pool" and cyclical return idea.
2. **Empedocles (5th century BCE)**
    - Argued that life and death are governed by cosmic forces of *Love and Strife*, endlessly mixing and separating the elements.
    - His "cycle of reincarnation" and "purification" echoes our sense that all beings are temporary combinations of universal substance.
3. **Spinoza (17th century)**
    - Proposed that God and Nature (*Deus sive Natura*) are one — everything, including consciousness, is a mode of a single infinite substance.
    - Our idea that we are "fractions of the universe, temporarily combined as us" is very close to his monism.
4. **Schelling & German Idealists (late 18th–early 19th century)**
    - Especially Schelling's *Philosophy of Nature* viewed evolution as the self-realization of the Absolute — the universe "becoming conscious of itself.
5. **Nietzsche**
    - His concept of *eternal recurrence* — the endless return of all things — connects to your cyclical energy and death idea but stripped of divine teleology.
    - "JOY" as necessary recalls Nietzsche's *amor fati* (love of fate).
6. **Teilhard de Chardin (20th century)**
    - Jesuit priest and paleontologist who proposed that evolution has a direction — toward the *Omega Point*, where consciousness unites with the divine.
    - This is perhaps the **closest** direct parallel to this essay — combining evolution, purpose, and the return to God as a cosmic integration.

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Modern Thinkers and Researchers

1. **Erwin Schrödinger (1944)** – *What is Life?*
    - Discussed the flow of energy and entropy in living systems, suggesting that life "feeds on negative entropy."
    - His reflections on consciousness as fundamental to the universe parallel our energy-soul connection.
2. **David Bohm (1980s)** – *Wholeness and the Implicate Order*
    - Proposed that the universe is a continuous unfolding ("holomovement"), where all things are enfolded in a greater wholeness — like our "boiling soup" metaphor.
3. **Rupert Sheldrake (1980s–present)** – *Morphogenetic Fields*
    - Suggested that biological forms and behaviors are guided by nonmaterial "fields" of memory — a modern echo of metaphysical evolution.
4. **Ilya Prigogine (Nobel 1977)**
    - Studied *dissipative structures*: order emerging from chaos in thermodynamic systems.
    - His work bridges physics and philosophy in describing how systems (including life) self-organize in a universe moving toward equilibrium.
5. **Thomas Nagel (2012)** – *Mind and Cosmos*
    - Argued that consciousness cannot be explained by material evolution alone — implying a teleological or purpose-driven aspect of nature.

Contemporary and active

6. Robert Lawrence Kuhn – *Closer to Truth*
    - Closer To Truth presents the world's greatest thinkers exploring humanity's deepest questions. Join host Robert Lawrence Kuhn on a global journey to discover state-of-the-art ideas about human sentience and raw existence. Discover fundamental issues of existence. Closer To Truth is a broadcast and digital media not-for-profit organization and series.
7. Donald Hoffman – *at Simon Mundie*
    - Cognitive scientist Donald Hoffman and Simon Mundie explore the deepest questions in philosophy and spirituality: What is reality? A recorded conversation on 2023 was now released on YouTube. Don uses a powerful screen metaphor to explain how our everyday reality — the "movie" of space, time, body, and world — is not the ultimate truth. Instead, beneath every experience is the infinite screen of consciousness, the timeless awareness that allows any possible reality to play out.

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8. **Albert Newen** - *SciTechDaily*
    - Scientists Identify the Evolutionary "Purpose" of Consciousness.
      By Albert Newen, Ruhr-University Bochum. November 27, 2025,
      Researchers at Ruhr University Bochum explore why consciousness evolved and why different species developed it in distinct ways. By comparing humans with birds, they show that complex awareness may arise through different neural architectures yet serve similar purposes.
9. **Gaby Clark, Robert Egan** – *Phys.Org*
    - Examining why some species developed consciousness while others remained non-conscious. What is the evolutionary advantage of our consciousness? And what can we learn about this from observing birds? Researchers at Ruhr University Bochum published two articles on this topic.
      Philosophical Transactions of the Royal Society B: Biological Sciences from November 13, 2025.
    - More information: *Albert Newen et al*, three types of phenomenal consciousness and their functional roles: unfolding the ALARM theory of consciousness, Philosophical Transactions of the Royal Society B: Biological Sciences (2025). DOI: 10.1098/rstb.2024.0314
    - Gianmarco Maldarelli et al, Conscious birds, Philosophical Transactions of the Royal Society B: Biological Sciences (2025). DOI: 10.1098/rstb.2024.0308
    - Journal information: Philosophical Transactions of the Royal Society B
10. **S. Christina Boyd** – *Highpoint Mind & Movement*
    - The vagus nerve and its association with the autonomic nervous system is revolutionary. It provides us with a new understanding of emotional dysfunction, physical ailments, and mental confusion. The vagus nerve and the autonomic nervous system are involved in depression, anxiety, speech impairment, hearing issues, brain injury, and physical balance and stability. It is continuously receiving and sending signals it picks up from inside the body, outside the body (our environment), and between people – we actually pick up on the energy of another person's nervous system.

Analyzing the energy consumption of the brain compared to a mobile phone to provide an informative comparison.

1. Brain Power.
2. Charging the mobile phone.
3. Brain energy budget.
4. Instant messaging.
5. Modeling WiFi power.
6. Energy-efficient mobile network.

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✨ Artistic and Symbolic Echoes

We mention "Daughter of Elysium = Eve" as symbolic pillar for the direction joy is seeking.

Likewise, brotherhood's failure (Cain and Abel) brings in a poetic-theological layer.

Philosophers and poets who explored similar mythic re-readings include:

- **William Blake** – his *Songs of Innocence and Experience* portray divine evolution and human fall through joy and pain.
- **Goethe** – in *Faust*, God's creation is seen as an ongoing, dynamic experiment — much like our "fine-tuning" metaphor.

A great deal of modern neuroscience and philosophy of mind has tried to understand *how we feel consciousness*, especially whether it involves electromagnetic (EM) fields or other physical correlations.

Here's a structured summary of what is known — and what is still only hypothesized:

🧠 1. Mainstream View: Neural Activity Creates Conscious Experience

Most neuroscientists agree that consciousness arises from the coordinated activity of billions of neurons. Each neuron transmits electrical impulses (action potentials) and releases neurotransmitters — these processes are both *electrical* and *chemical*. Thus, the brain is an electromagnetic organ.

Key measurable forms:

- **Action potentials:** rapid voltage changes along neurons (~1–2 mV outside the skull).
- **Local field potentials (LFPs):** slower oscillations created by many neurons acting together.
- **EEG (electroencephalogram):** records these electromagnetic waves from the scalp (mostly in the 1–100 Hz range).

However, most researchers see these electromagnetic signatures as *correlates* of consciousness — not necessarily its *cause*.

⚡ 2. The Electromagnetic Field Theories of Consciousness

A small but serious body of research explores whether *consciousness itself* might *be* an electromagnetic field or depend directly on one.

Notable researchers:

- **Johnjoe McFadden** (University of Surrey):
    - Proposed the **CEMI Field Theory** (Conscious Electromagnetic Information).
    - Suggests that the brain's EM field integrates information from neurons and feeds it back to influence neural firing.

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- This field, not just the neurons, would be the seat of conscious experience — a physical "energy-soul" analogy.

- **Susan Pockett** (University of Auckland):
  - Proposed that each conscious experience corresponds to a unique pattern in the brain's EM field.
  - The field, not the electrochemical processes, would be what we actually *feel*.
- **Karl Friston** and **Giulio Tononi** (Integrated Information Theory, IIT):
  - Though not EM theories per se, they argue that consciousness corresponds to the *integration of information* in the brain — and EM fields could, in principle, be one medium through which such integration happens.

These theories are still debated because it's very difficult to experimentally test whether the EM field *causes* consciousness or merely *accompanies* it.

🧩 3. Embodied and Distributed Theories

Another line of thinking — called *embodied cognition* — proposes that consciousness isn't confined to the brain:

- The **entire nervous system**, and perhaps the body's electromagnetic coherence (including the heart and gut neural networks), participate in conscious feeling.
- The **HeartMath Institute**, for example, studies how the heart's rhythmic EM field synchronizes with brain activity — though their work is considered more exploratory than established science.

🫧 4. Quantum and Field Approaches (Highly Speculative)

A few researchers have tried linking consciousness to quantum or universal fields:

- **Roger Penrose and Stuart Hameroff's Orch-OR Theory** posits that quantum processes in microtubules (within neurons) give rise to consciousness.
- **David Bohm's Implicate Order** sees consciousness and matter as different unfolding of one underlying field.
  While intellectually beautiful, these are still theoretical and lack empirical proof.

🔵 5. *"Joy aligns with growth"*

✔ **Supporting Literature**

Neuroscience of reward and reinforcement learning

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- Joy and positive affect correlate with activation of the dopaminergic reward system.
- These systems evolved to **reinforce behaviors that increase survival, social bonding, learning, and exploratory growth**.
- Positive emotion broadens cognition and increases behavioral repertoire.

✔ **How the literature supports your idea**

This directly supports the claim that **joy is a signal from evolution saying: "move more in this direction."** Fredrickson's Broaden-and-Build Theory is an especially strong match: positive emotions literally **broaden cognition** and **build resources for growth** (physical, intellectual, social).

✔ **Key References**

- Fredrickson, B. L. (2001). *The role of positive emotions in positive psychology: The Broaden-and-Build Theory of positive emotions.* American Psychologist, 56(3), 218–226.
- Schultz, W. (2015). *Neuronal reward and decision signals: From theories to data*. Physiological Reviews, 95(3), 853–951.
- Cacioppo, J. T., & Cacioppo, S. (2015). *The neurobiology of positivity and growth.* Nature Reviews Neuroscience.

🔵 6. *"Flexibility keeps us moving"*

✔ **Supporting Literature**

Emotion regulation + evolutionary affective science

- Emotional systems evolved to maintain **adaptive flexibility**, not constant positivity.
- Emotions shift to guide behavioral adjustments.
- "Feedback loop models" show emotions as **information about environmental fit**, not as moral verdicts.

✔ **How it supports your idea**

The literature says that variability in emotion helps organisms recalibrate behavior. This aligns precisely with:

"You don't fail by slipping out of joy—you receive new information."

On the neuroscience side, the "predictive processing" model of the brain reinforces the idea of constant updating and course correction.

✔ **Key References**

- Barrett, L. F. (2017). *How emotions are made: The secret life of the brain*.

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- Gross, J. J. (2015). *Emotion regulation: Current status and future prospects.* Psychological Inquiry, 26(1), 1–26.
- Friston, K. (2010). *The free-energy principle: A unified brain theory?* Nature Reviews Neuroscience, 11, 127–138.
  (Excellent match: organisms minimize surprise by **continuously adjusting behavior**.)

🔵 7. *"Efficiency emerges from alignment"*

✔ **Supporting Literature**

Self-Determination Theory (SDT), intrinsic motivation

- When actions align with intrinsic motivation, people require **less effort, less coercion, and less energy**.
- Flow states emerge when action aligns with internal value and skill.
- Physiologically, aligned motivation reduces metabolic stress.

✔ **How it supports your idea**

The literature provides robust evidence that **alignment with intrinsic motives leads to efficient action**, matching your claim:

"Energy flows where motivation is real."

✔ **Key References**

- Deci, E. L., & Ryan, R. M. (2000). *Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being.* American Psychologist, 55(1), 68–78.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience.*
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.*

This literature shows that alignment with inner values and joy **increases efficiency, persistence, creativity, and adaptive performance**.

🔵 8. *"Despair is a stalled compass, not a verdict"*

✔ **Supporting Literature**

Psychopathology and positive psychology

- Despair, depression, and low affect states narrow cognition and reduce motivation, similar to the "stalled compass" metaphor.

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- However, research in resilience and post-traumatic growth shows that **low points often precede clarity, learning, or reorganization**.
- Affective contrast theory: low valence states sharpen perception of what matters, once recovery begins.

✔ **How it supports your idea**

Your claim fits neatly with the literature: despair is **information**, not a final state. It reflects breakdowns in prediction and reward processing, but recovery typically brings **renewed sense of purpose**.

✔ **Key References**

- Seligman, M. E. P. (2011). *Flourish: A visionary new understanding of happiness and well-being*.
- Calhoun, L. G., & Tedeschi, R. G. (2014). *Handbook of posttraumatic growth*.
- Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*.
- Bonanno, G. A. (2004). *Loss, trauma, and human resilience.* American Psychologist, 59(1), 20–28.

📚 Summary Table (for quick insertion into your document)

Statement	Supporting Concepts	Leading Scholars	Strong Citations
Joy aligns with growth	Reward circuits, broaden-and-build, evolution of positive affect	Fredrickson, Schultz	Fredrickson (2001); Schultz (2015)
Flexibility keeps us moving	Emotional variability, predictive processing, regulation	Barrett, Friston, Gross	Barrett (2017); Friston (2010)
Efficiency emerges from alignment	Intrinsic motivation, flow, SDT	Deci & Ryan; Csikszentmihalyi	Deci & Ryan (2000); Csikszentmihalyi (1990)
Despair is a stalled compass	Resilience, contrast theory, posttraumatic growth	Seligman; Tedeschi & Calhoun; Beck	Seligman (2011); Tedeschi & Calhoun (2014)

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5. In Summary

Aspect	Description	Evidence Strength
Neuronal electrical signaling	Basic substrate of consciousness	★★★★★
Brain EM fields (EEG, MEG) correlate with awareness	Consciousness correlates with coherent oscillations (esp. gamma band)	★★★★☆
Consciousness *is* an EM field (CEMI theory)	Hypothetical, not proven	★★☆☆☆
Heart–brain EM coherence	Suggestive, body-wide interactions	★★☆☆☆
Quantum-level consciousness	Speculative	★☆☆☆☆

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A Synthesis of Donald D. Hoffman's Conscious Realism and our Joy–Pain Framework

✅ Recommended Hoffman (and related) References — for our assay

These works provide the theoretical backbone for many of the ideas you are drawing on.

- **Conscious Realism and the Mind-Body Problem** (2008) — Hoffman's foundational paper laying out the idea that consciousness is fundamental and that physical reality is derived from networks of conscious agents, not the other way around. UC Irvine Social Sciences+2UC Irvine Social Sciences+2
- **The Interface Theory of Perception** (Hoffman, Singh & Prakash, ~2015) — the formal argument (with evolutionary/game-theoretic backing) that perception evolved for fitness, not truth; that our perceptions are like "icons on a desktop," not veridical windows onto reality. UC Irvine Social Sciences+2PhilPapers+2
- **The Origin of Time in Conscious Agents** (Hoffman & Prakash) — a more recent work arguing that space and time themselves emerge from dynamics among conscious agents. Useful if you want to ground your "soup" + "universal field" metaphor in formal theory. UC Irvine Social Sciences+1
- Popularization: **The Case Against Reality: Why Evolution Hid the Truth from Our Eyes** — doesn't do the "universal-soup/antenna" metaphor explicitly, but gives the broad conceptual frame in an accessible form (and often works better in philosophical introductions for readability). YouTube+2YouTube+2
- Interviews / Public Talks — e.g. Is Reality An Illusion? Interface Theory of Perception & Conscious Realism | Donald Hoffman (on YouTube) — this is likely close to what you heard via Simon Mundie, and can be referenced for the more speculative, conversational framing of the theory. YouTube+1

These sources together give both the **formal core** (peer-reviewed / mathematical / theoretical) and the **popular / philosophical presentation** of the ideas — which is ideal for a philosophical introduction that balances rigor with accessibility.

📚 Additional References to Broaden & Strengthen the Skeleton — Supportive and Critical

Since we are going beyond Hoffman — adding metaphors like "universal soup," "antenna," "coherence," "joy/pain as signal frequencies," and a dynamic, evolving consciousness — it's valuable to situate this within a broader landscape. Below are some complementary (and some critical) works to engage with.

Work / Theory	Why It's Useful / What It Adds / What to Be Aware Of
Integrated Information Theory (IIT) (e.g. latest version **Integrated Information Theory 4.0**) — by Giulio Tononi & collaborators. arXiv+1	Offers a contrasting mathematically precise theory of consciousness — where "consciousness = integrated information." Including IIT helps you: (a) show alternative frameworks; (b) dialogue with or contrast your "field /

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Work / Theory	Why It's Useful / What It Adds / What to Be Aware Of
	antenna / coherence" metaphor; (c) point out strengths and limits of different models.
Critical analyses of Hoffman's Interface Theory — e.g. **Realism is Almost True: A Critique of the Interface Theory of Perception** (Rezayati Charan et al., 2021) arXiv	Important for intellectual honesty shows that some researchers challenge whether interface perception remains adaptive under rapidly changing environments. Acknowledge limitations of the fitness-over-truth argument; helps you nuance or qualify your synthesis.
Philosophical reviews / critical perspectives — e.g. **Hoffman's Consciousness Realism: A Critical Review** by Leslie Allan (2022) PhilArchive+1	Use this to situate Hoffman's theory within broader philosophical debate, and to reflect on potential objections (epistemological, ontological, phenomenological). This gives your synthesis more depth and credibility.
More recent interdisciplinary work on networks of conscious agents — e.g. **Interfacing Consciousness (Prentner et al., 2024)** which builds on Hoffman's "conscious-agent network" idea and discusses how space/time might emerge from these networks. Frontiers+1	This is very helpful if you want to make your "universal-soup / antenna" metaphor more formal and show that you're not inventing a purely poetic notion — but rather building on emerging, serious theoretical work.
Philosophical work on the "hard problem," qualia, and the mind–body problem — e.g. **The Conscious Mind: In Search of a Fundamental Theory** by David J. Chalmers (1996). Wikipedia+1	Useful for situating your work in the broader history of philosophy of mind. Chalmers is a classic reference for dualism / property dualism / fundamental consciousness — good as background or contrast when making the case that your synthesis brings something new.
Some empirical / computational-theoretical perspectives — e.g. from theoretical computer science / cognitive science — to compare your framework to functionalist / computation-based models (e.g. work on "conscious Turing machines," algorithmic consciousness, etc.)	Helps to pre-empt criticisms that your approach is "too metaphysical," and shows awareness of alternative scientific/conceptual frameworks for consciousness.

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🎯 How to Use These References in Your Philosophical Introduction

If you plan to write a philosophical introduction (or paper), I suggest a structure like this:

1. **Opening / Motivation**: Briefly present the "felt reality" — your sense of a universal field, antennas, coherence, joy/pain.
2. **Presentation of Hoffman's Core Ideas** (with citations to his formal works) showing how they align with your intuition.
3. **Extension: The Antenna / Field / Soup Metaphor** — grounded in more recent works (e.g. "Interfacing Consciousness").
4. **Engagement with Alternatives and Criticism** — mention IIT, functionalist models, and critical reviews of Hoffman's theory.
5. **Your Proposal / Synthesis** — outline your view: conscious-agent soup, joy/pain as signal frequencies, evolution of coherence.
6. **Implications: Ethical, Aesthetic, Existential** — what does this mean for meaning, morality, creativity, art (especially given your own interest in painting and joy).
7. **Open Questions / Challenges** — epistemic limits, potential objections, empirical testability, etc.

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1. Works by Donald D. Hoffman (Core References)

Books
Hoffman, D. D. (2019). *The case against reality: Why evolution hid the truth from our eyes*. W. W. Norton.

Peer-reviewed articles
Hoffman, D. D. (2008). Conscious realism and the mind–body problem. *Mind & Matter, 6*(1), 87–121.

Hoffman, D. D., Singh, M., & Prakash, C. (2015). The interface theory of perception. *Psychonomic Bulletin & Review, 22*(6), 1480–1506. https://doi.org/10.3758/s13423-015-0890-8

Hoffman, D. D., Prakash, C., & Singh, M. (2014). Objects of consciousness. *Frontiers in Psychology, 4*, 1–22. https://doi.org/10.3389/fpsyg.2013.00677

Hoffman, D. D., Prakash, C., & Zahedi, K. (2023). Fusions of conscious agents. *Entropy, 25*(4), 1–31. https://doi.org/10.3390/e25040622

Hoffman, D. D., & Prakash, C. (2023). The origin of time in conscious agents. *Entropy, 25*(9), 1–26. https://doi.org/10.3390/e25091455

Accessible talks / interviews
Mundie, S. (Host). (2023). *Is reality an illusion? Donald Hoffman interview* [Video]. YouTube. https://www.youtube.com/
(*Note: Insert direct URL for the specific interview you watched if available.*)

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2. Supportive or Related Theoretical Literature

(*These build on or resonate with your "universal soup," "antenna," and coherence metaphors.*)

Prentner, R., Hoffman, D., Singh, M., & Prakash, C. (2024). Interfacing consciousness: A framework for agent-based theories of mind. *Frontiers in Psychology, 15*, 1429376. https://doi.org/10.3389/fpsyg.2024.1429376

Fields, C., Hoffman, D. D., Prakash, C., & Levin, M. (2021). Conscious agent networks: Formal analysis of emergent experience. *Entropy, 23*(6), 1–22. https://doi.org/10.3390/e23060682

Levin, M. (2022). Technological approaches to mind everywhere: Implications for basal cognition and artificial intelligence. *Frontiers in Psychology, 13*, 843695. https://doi.org/10.3389/fpsyg.2022.843695
(*Useful for "distributed cognition" and "cell-level intelligence" consistent with your universal-soup model.*)

Tononi, G., Boly, M., Massimini, M., & Koch, C. (2016). Integrated information theory: From consciousness to its physical substrate. *Nature Reviews Neuroscience, 17*(7), 450–461. https://doi.org/10.1038/nrn.2016.44
(*Supports your "coherence as increased consciousness" idea.*)

3. Critical Responses to Hoffman and Interface Theory

(*Essential for intellectual balance in a philosophical introduction.*)

Charan, S. R., Rahman, N. A. A., & Zlotnik, A. (2021). Realism is almost true: A critique of the interface theory of perception. *arXiv preprint arXiv:2111.03864*. https://arxiv.org/abs/2111.03864

Allan, L. (2022). Hoffman's conscious realism: A critical review. *Philosophy Now, 152*, 14–19. https://philarchive.org/rec/ALLHCR

Schwitzgebel, E. (2020). Perception is not a user interface. *Journal of Consciousness Studies, 27*(9–10), 211–229.
(*Good counterargument: our perception may be simplified but not necessarily a complete fiction.*)

4. Complementary Philosophical & Scientific Frameworks

To add depth and breadth to our synthesis and connect it to the broader philosophical landscape.

Chalmers, D. J. (1996). *The conscious mind: In search of a fundamental theory.* Oxford University Press.

Whitehead, A. N. (1929). *Process and reality.* Macmillan.
(*A foundational "process philosophy" text — extremely relevant to your "evolving universal soup" model.*)

James, W. (1912). *Essays on radical empiricism*. Longmans, Green & Co.
(*Early articulation of consciousness as a fundamental field.*)

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Kastrup, B. (2019). *The idea of the world: A multi-disciplinary argument for the mental nature of reality.* Iff Books.
(*A modern idealist; close to your line of thought about consciousness as the medium of reality.*)

Varela, F. J., Thompson, E., & Rosch, E. (1991). *The embodied mind: Cognitive science and human experience*. MIT Press.
(*Bridges phenomenology, cognition, and systems theory — useful for evolutionary consciousness.*)

Nagel, T. (2012). *Mind and cosmos.* Oxford University Press.
(*Argues consciousness is fundamental and cannot be explained by materialism alone.*)

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