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Not peer-reviewed version

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Posted Date: 7 October 2025

doi: 10.20944/preprints202510.0528.v1

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Eros and Time's Embrace

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Abstract

Time is the erotic unfolding and re-folding of the universe. This paper presents a metaphysical framework grounded in evolutionary panpsychism and process-relational philosophy that addresses fundamental questions in consciousness studies through a novel synthesis of Whiteheadian metaphysics, Hunt and Schooler's General Resonance Theory, and electromagnetic field approaches to consciousness. Rather than treating consciousness as an emergent byproduct of material complexity or as a reflection of pre-existing perfection, we propose that consciousness manifests through what we term *eros*—not as a kind of cosmic desire *per se* but as the fundamental attractive quality inherent in every constituent of reality, from quantum events to complex conscious beings. Drawing on contemporary developments in process thought, resonance-based theories of consciousness, and electromagnetic field theories of mind, this framework outlines a vision of a participatory cosmos where consciousness, temporality, and materiality co-emerge through relational dynamics driven by the fundamental attractive-repulsive polarity present in all actual entities. This approach contrasts with both reductionist materialism and top-down cosmopsychist models by proposing a metaphysics of immanent becoming that locates the source of cosmic creativity, including biological evolution, in the basic constituents of reality rather than in either mechanistic emergence or transcendent consciousness. In this new "physics of love" temporal flow represents the rhythm through which fundamental attractive forces actualize themselves in novel forms, electromagnetic resonance provides the architecture of life and relational consciousness, and the universe evolves toward increasingly rich forms of consciousness.

Keywords: process philosophy; panpsychism; consciousness; resonance theory; electromagnetic fields; Whitehead; temporality; relational ontology

1. Introduction: Toward an Erotic Cosmology

Contemporary consciousness studies finds itself at a pivotal juncture. After decades of materialist orthodoxy that attempted to explain mind as an epiphenomenon of neural computation—what I have characterized as an extended "Behaviorist hangover" afflicting the field—there is growing recognition that such atavistic frameworks systematically exclude the most essential features of conscious experience: its immediacy, interiority, creativity, and dynamic temporal character (Chalmers, 1996; Nagel, 1974; Griffin, 1998; Schooler and Hunt 2011; Hunt and Schooler 2019, Goff 2017, 2023). As Strawson (2006) has argued, the "hard problem" of consciousness persists precisely because materialist approaches have failed to take seriously the reality of experience itself.

This paper proposes a partially novel metaphysical foundation that places consciousness, temporality, and what I term *eros*—understood not as cosmic desire *per se* but as the fundamental attractive quality present in all actual entities—at the ontological center of reality. While some contemporary theories attempt to locate consciousness in pre-physical or non-spatiotemporal domains of maximal coherence (Schneider & Bailey, 2024), our approach remains resolutely immanent and processual. I propose that consciousness is neither a derivative property of matter nor a projection from a hidden source, but rather emerges from the creative relationships formed when the basic constituents of reality—each exhibiting fundamental attractive and repulsive qualities—achieve resonant integration across multiple scales of organization.

 doi:10.20944/preprints202510.0528.v1

Schneider and Bailey's recent "Superpsychism" approach locates consciousness fundamentally in a proto-temporal arena of holistic entanglement that underlies spacetime itself, characterized by maximal coherence and zero entropy. While I appreciate their recognition that consciousness may be more fundamental than the conventional view suggests, the present framework differs by grounding consciousness in the evolutionary dynamics of spatiotemporal reality rather than in a pre-physical domain.[1] This processual view also addresses a conceptual difficulty with emergence-based theories: time does not emerge because it would seem that emergence necessarily presupposes time.

This generative force I call *eros (following Whitehead), which is* not a desire possessed by the universe as a whole, but a fundamental attractive quality inherent in every constituent of reality, from the smallest quantum events to the most complex conscious beings. Following both classical Platonic insights and Whitehead's metaphysics, eros represents the basic attractive pole of what we might call the "fundamental polarity" present in all actual entities—their inherent tendency toward certain relationships over others, toward integration over isolation, toward greater intensity of experience over mere repetition (Kristeva, 1987; Irigaray, 1993; Whitehead, 1929). This attractive quality, alongside the polar repulsive property, aggregated across countless micro-experiences, generates the creative advance we observe throughout cosmic evolution.

The theoretical framework weaves together two primary strands: the speculative metaphysics of Alfred North Whitehead, particularly his categories of Creativity, actual occasions, and the process of concrescence (Whitehead, 1929), and contemporary scientific developments in General Resonance Theory (GRT) and electromagnetic field theories of consciousness (Hunt & Schooler, 2019; Hunt & Jones, 2023; Pockett, 2012; McFadden, 2002).

Whitehead's process philosophy provides a robust ontological foundation in which ultimate reality consists not of substances but of processes—not static things but temporal events of experience. "The flux of things is one ultimate generalization around which we must weave our philosophical system" (Whitehead, 1929, p. 208).

GRT, developed through collaborative work with Jonathan Schooler and others (Hunt & Schooler, 2019; Hunt, 2020; Young, Hunt & Ericson, 2022), proposes that consciousness emerges through the shared resonance of coupled oscillatory systems. From coordinated neuronal populations to body-wide synchronization of electromagnetic fields, resonance serves as the physical correlate of what Whitehead termed "prehension"—the fundamental feeling-relation that constitutes experience (Hunt, 2011). This theory provides a scientifically grounded bridge between empirical neuroscience and metaphysical panpsychism.

The integration of GRT with Whiteheadian metaphysical categories—particularly *actual occasions*, *prehension*, and the *subjective aim*—yields what I call a process-relational physics of consciousness. This framework finds additional support in emerging theories of cosmic origins such as Quantum Ocean Theory (QOT) (Hunt 2025, in progress), which proposes that our universe began not with a singular Big Bang but with the "first embrace" of two improbable energy ripples in an infinite ocean of potential—a primordial resonance that marked the beginning of our universe's time, structure, and the capacity for experience itself. This was a "small bang," an act of erotic embrace that began everything in this particular universe. In this vision, the universe's very genesis represents an act of creative relationship-formation, with consciousness and temporality co-emerging from the first instance of the cosmic eros.

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[1] Whitehead himself might agree more fully with Schneider and Bailey's approach due to the importance in his system of "eternal objects," "the primordial nature of god," and "conceptual ingression," which do indeed form a kind of prototemporal or more accurately an atemporal domain. However, my reinterpretation of Whitehead's system largely rejects his atemporal domain due to the same issue: how can atemporality be a key ingredient leading to temporality when, by definition, atemporal domains never change? See Sherburne 1967.

 doi:10.20944/preprints202510.0528.v1

2. From Entanglement to Embodiment: Consciousness in the Fabric of Becoming

Quantum mechanics has fundamentally challenged classical assumptions about the nature of reality by revealing that the physical world consists not of isolated substances but of deeply entangled relational processes (Bell, 1964; Aspect et al., 1982). Quantum entanglement demonstrates that particles do not simply interact across space—they are constituted by their relationships, exhibiting correlations that seem to transcend classical spacetime constraints (Einstein et al., 1935; Bohm, 1980). As Barad (2007) argues in her influential work on "agential realism," these findings suggest a universe whose fundamental character is thoroughly relational rather than substantialist.

This quantum insight resonates profoundly with the ontological vision articulated by Alfred North Whitehead in his "philosophy of organism." For Whitehead, the ultimate constituents of reality are not material particles but "actual occasions of experience"—discrete temporal pulses that *prehend* one another across spatiotemporal intervals (Whitehead, 1929). Each occasion functions sequentially as experiencing subject and in the next moment, after it has concresced, as datum for other subjects' experience. Reality thus unfolds as an ongoing process of creative synthesis wherein every moment represents a novel integration of inherited influences with emergent possibilities (Griffin, 1998; Sherburne, 1966), now, now, now….

General Resonance Theory provides a contemporary scientific correlate to this metaphysical framework. According to GRT, consciousness arises through dynamic resonance among oscillatory systems operating across multiple temporal and spatial scales (Hunt & Schooler, 2019). When constituent components—including but not limited to neurons, glial cells, cardiac rhythms, and broader bodily systems—achieve coherent vibratory alignment, a unified field of conscious experience emerges. This process of synchronization, termed "shared resonance," constitutes the proposed physical substrate underlying experiential unity (Hunt, 2020). This is an admittedly redundant phrase but I maintain the redundancy to stress the fact of shared rhythms among constituents in proximity to each other, which is the physical basis for the combination of lower-level conscious entities into more complex consciousness in GRT.

The structural homology between GRT and Whiteheadian metaphysics is, of course, intentional and lineal. I have long been inspired by Whitehead's work, particularly Griffin's interpretation of it (Griffin 1998, 2001). Both frameworks treat relationality as ontologically fundamental rather than accidental. In GRT, consciousness depends not on intrinsic properties of isolated neural units but on their coordinated oscillatory dynamics—the emergent harmonics generated through interaction (Hunt & Jones, 2023). Similarly, in Whitehead's cosmology, actual occasions are constituted entirely through their prehensive relations with other occasions; there are no "bare" substances underlying experience (Whitehead, 1929, p. 167).

Both approaches emphasize the principle of transcendence through integration, which Whitehead described succinctly as "the many become one and are increased by one" (Whitehead, 1929, p. 21). In GRT, macro-consciousness emerges as micro-conscious elements achieve resonant coherence while retaining their individual oscillatory patterns. In Whitehead's metaphysics, each moment of concrescence synthesizes the multiplicity of past occasions into a novel unity without eliminating the distinctness of what is unified. This represents a crucial advance over both reductive materialism, which denies the reality of macro-conscious unity, and substance dualism, which cannot explain mind-matter interaction (Griffin, 1998; Hunt, 2011).

The concept of *concrescence*—Whitehead's term for the process by which an actual occasion integrates felt influences from its environment—bears some resemblance to contemporary neuroscientific models of consciousness. Concrescence begins with a phase of "reception" wherein multiple data are "prehended" or felt, followed by "supplementation" involving the introduction of novelty, and culminating in "satisfaction" where the many influences achieve unified integration and thus become concrete (Whitehead, 1929, pp. 212-213). This temporal structure mirrors findings in neuroscience regarding the integration of distributed neural processes into unified conscious states (Dehaene, 2014; Tononi, 2012).

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However, unlike mechanistic models that treat integration as mere information processing, both Whitehead and GRT emphasize the aesthetic dimension of conscious synthesis. Whitehead insisted that every concrescence aims toward "intensity of satisfaction"—a form of experiential richness that cannot be reduced to computational efficiency (Whitehead, 1929, p. 27). GRT similarly suggests that the quality of conscious experience correlates with the depth and aesthetic coherence of underlying resonant fields rather than mere synchronization *per se* (Hunt & Schooler, 2019). The many become one, and are increased by one.

Furthermore, this perspective suggests that consciousness manifests as a scalar and graded phenomenon rather than a binary property. Just as Whitehead attributed some form of "experience" even to the simplest actual entities—though of incomparably diminished intensity compared to human consciousness—GRT implies that rudimentary conscious processes may operate across many levels of physical organization (Hunt, 2011; Goff, 2017). Embodiment thus represents a hierarchically structured process of nested resonances, with consciousness intensifying as harmonic patterns deepen and diversify across multiple spatiotemporal scales.

3. Panpsychism Reimagined: Evolutionary Consciousness and the Combination Problem

Panpsychism—the philosophical position that consciousness constitutes a fundamental feature of reality—has experienced remarkable revival in contemporary philosophy of mind (Goff, 2017; Strawson, 2006; Chalmers, 2017). This resurgence partly reflects growing recognition that materialist approaches face seemingly intractable difficulties in explaining how consciousness could emerge from purely non-experiential components (the "hard problem"), while panpsychist approaches offer more naturalistic and non-paradoxical accounts of mind-matter continuity (Griffin, 1998; Skrbina, 2005).

However, panpsychism confronts its own theoretical challenges, most notably the "combination problem" articulated by William James and reformulated by Chalmers (2017). If fundamental physical entities possess some form of experience, how do these micro-experiences combine to generate the rich, unified awareness characteristic of human and animal consciousness? How does the integration of countless micro-subjects yield a genuine macro-subject such as a human rather than merely a collection of separate experiences stuffed into a shared container?

Traditional approaches to this problem typically assume that experiences are discrete, bounded entities that must somehow be "added together" to form larger wholes. But this framework misconceives the nature of experience itself. Whitehead's process metaphysics offers a more promising alternative by treating each moment of experience as an active process of integration—what he termed *concrescence*—rather than a static unit to be combined with others (Whitehead, 1929; Griffin, 1998).

In Whitehead's model, unity of consciousness arises not through mechanical aggregation but through aesthetic synthesis. Each actual occasion actively prehends or "feels into" the experiences of other occasions, integrating this inherited multiplicity into a novel form of experiential unity. The process is guided by what Whitehead called the "subjective aim"—a teleological principle directing each occasion toward optimal "satisfaction" or aesthetic intensity (Whitehead, 1929, pp. 244-245). This synthesis involves genuine creativity: the integrated whole transcends the mere sum of its constituents while preserving their distinctiveness within the novel unity.

General Resonance Theory provides a contemporary scientific framework that embodies these metaphysical insights. According to GRT, consciousness emerges when oscillatory systems achieve resonant coupling across multiple scales and frequencies (Hunt & Schooler, 2019). This resonance involves more than mere synchronous activity—it requires the formation of coherent electromagnetic fields wherein constituent elements participate in shared dynamical structures while maintaining their individual oscillatory patterns (Hunt & Jones, 2023).

Crucially, GRT demonstrates how the combination problem dissolves when we shift from thinking about static subjects to dynamic processes of resonant coupling. Micro-conscious elements

 doi:10.20944/preprints202510.0528.v1

do not combine by being "added together" but by entering into resonant relationships that generate new and emergent field properties. These field properties constitute genuine macro-conscious events while preserving the distinct contributions of constituent oscillators (Hunt, 2020; Young, Hunt & Ericson, 2022). This is the case because GRT suggests that consciousness itself lies primarily in EM fields, so it is the very spatiotemporal structure of oscillating EM fields that is the specific nature of consciousness.

This framework enables a reformulation of panpsychism as an evolutionary form of panpsychism. Rather than attributing fully-formed consciousness to all matter indiscriminately, I propose that all matter enjoys a rudimentary experiential aspect that achieves increasing intensity, complexity, and integration through evolutionary processes based on resonance, which become exponentially more rich in biological forms due to the criss-crossing and harnessing of EM field integrations and analog field computation made possible by such fields. The capacity for resonance—and thus for consciousness—represents an inherent potentiality of physical reality that actualizes differently depending on context, complexity, and evolutionary history.

This evolutionary dimension proves crucial because it explains how consciousness can be both fundamental and also emergent in terms of new forms over time. Consciousness is fundamental in that the capacity for experience pervades nature; it is (weakly) emergent in that new forms of unified awareness arise through evolutionary processes that could not have been predicted from knowledge of the constituent parts alone. Evolution itself becomes comprehensible as what we may call an "erotic process"—not merely a struggle for survival but the cosmos's exploration of increasingly rich forms of both morphology and experience. Yes, survival is part of that history, but so is aesthetic appreciation, attraction and repulsion. These are all pieces of eros.

Both Whitehead's metaphysics and GRT emphasize the role of what we may call *fundamental polarity* rather than cosmic desire *per se* in driving these evolutionary developments. Each actual entity, from quantum events to complex organisms, exhibits what we might term an inherent "attractive-repulsive" quality—a fundamental orientation toward certain relationships over others (Whitehead, 1929, p. 244). The attractive pole of this polarity is eros: not a desire possessed by macro-entities but the aggregated effect of countless micro-attractions operating throughout the cosmos. Or we may consider both attraction and repulsion the twin halves of eros. We cannot know love without hate, desire without disgust.

This understanding makes eros scientifically tractable rather than mystically remote. We can observe attractive and repulsive dynamics at every scale of physical reality: quantum particles exhibiting "spin" preferences, atoms forming chemical bonds, magnets with opposite poles, molecules self-assembling into complex structures, star dust coalescing into stars and planets, organisms developing tropisms toward beneficial conditions, and conscious beings expressing preferences for certain experiences over others. The eros inherent in cosmic evolution emerges from below—from the fundamental polarity present in reality's basic constituents—rather than being imposed from above by some cosmic subject. In this way I am proposing physics not mysticism.

From this perspective, the evolution of consciousness represents not an accident of biological development but an expression of eros operating throughout the cosmos. Organisms that develop more sophisticated capacities for resonant integration are not merely more biologically "successful"—they participate more fully in the universe's ongoing experiment in self-awareness. Consciousness evolves because reality itself is fundamentally relational, and experience constitutes the medium through which relations are actualized.

This view resolves the traditional opposition between reductive and emergentist approaches to consciousness. Mind is neither reducible to brain states nor mysteriously emergent from them. Instead, consciousness represents the flowering of relational processes that operate throughout nature but achieve their richest expression in complex biological systems capable of sustaining multiple levels of resonant integration simultaneously.

4. Time as the Rhythm of Eros: Temporality and Cosmic Creativity

 doi:10.20944/preprints202510.0528.v1

The nature of time represents one of the deepest puzzles in both philosophy and physics. While lived experience presents time as an ongoing flow of becoming—a continuous passage from past through present toward future—modern physics often treats temporal passage as illusory or derivative. Einstein's theory of relativity has been interpreted to require a kind of "block universe" wherein all moments exist equally, rendering the flow of time a subjective artifact rather than an objective feature of reality (Einstein, 1916; Minkowski, 1908). Similarly, quantum mechanics typically treats time as an external parameter rather than a dynamical element intrinsic to quantum systems themselves (Wheeler & DeWitt, 1967).

Yet lived temporality resists such abstraction. Consciousness unfolds not as a sequence of discrete snapshots but as an ongoing flow of creative synthesis. The experience of temporal passage is not a secondary illusion overlaying a fundamentally timeless reality—it constitutes the very form through which awareness manifests (Bergson, 1896; Husserl, 1905; Merleau-Ponty, 1945). Process philosophy, particularly Whitehead's metaphysics, affirms this experiential insight by treating time as the rhythm of cosmic creativity, of eros, rather than a mere container for events (Whitehead, 1929; Griffin, 1998).

For Whitehead, temporal passage reflects the universe's ongoing creative advance wherein each moment represents a novel synthesis of inherited influences with emergent possibilities, at every locus of our universe. Time is not uniform duration but what he termed "epochal becoming"—a series of discrete yet interconnected occasions of experience, each integrating its past while contributing to future becomings (Whitehead, 1929, pp. 68-69). This model resolves classical paradoxes about temporal flow by grounding time in the creative activity of actual occasions rather than treating it as an abstract dimension containing them.

General Resonance Theory is based on this processual understanding of temporality. According to GRT, consciousness emerges from oscillatory patterns that are inherently temporal—repeating cycles, frequency relationships, phase coupling, and cross-temporal integration (Hunt & Schooler, 2019).

The structure of consciousness itself is fundamentally temporal in today's neuroscience. Delta waves (0.5-4 Hz), theta oscillations (4-8 Hz), alpha rhythms (8-13 Hz), beta activity (13-30 Hz), and gamma waves (30-100 Hz) in neural systems each operate on distinct temporal scales yet become integrated through cross-frequency coupling into unified conscious fields (Hunt & Jones, 2023; Fries, 2015). This temporal integration generates not merely awareness but *meaning*—the depth and power of conscious experience emerges from harmonic relationships among different rhythmic layers, analogous to the way musical meaning arises from interactions among melodic, harmonic, and rhythmic elements (Hunt & Schooler, 2019).

In this context, we can understand eros as the temporal expression of the fundamental attractive quality present in all actual entities. Each moment of cosmic becoming represents the collective effect of countless micro-attractions and micro-repulsions, as actual occasions seek relationships that enhance rather than diminish their experiential intensity. Time emerges as the rhythm through which this fundamental polarity actualizes itself—generating duration, sequence, and meaningful development through the ongoing integration of attractive and repulsive forces operating at every scale of reality.

Whitehead's insight that each moment prehends its past while aiming toward novel integration is mirrored in GRT's model of how consciousness integrates multiple temporal scales into coherent experience. Both frameworks suggest that the future remains genuinely open—not predetermined by past conditions but created through the temporal process of creative synthesis itself. This temporal creativity is not arbitrary but guided by eros as a cosmic lure toward greater intensity, harmony, and aesthetic richness (Whitehead, 1929, p. 346). Yes, all entities have a degree of free will, a creative becoming, including humans.

This understanding transforms our conception of mortality and impermanence. In a block universe model, death merely represents a different location in spacetime. But in a process-relational cosmos, death marks the cessation of a particular pattern of resonant integration—the release of a

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temporarily conscious field pattern back into the broader temporal flow of cosmic becoming. What endures is not static identity but what Whitehead called "objective immortality"—the permanent contribution that each temporal process makes to the ongoing creative advance of the universe (Whitehead, 1929, p. 351).

The implications for consciousness studies loom large. If awareness emerges from the temporal integration of oscillatory processes, then disruptions to these rhythms—whether from trauma, neurological damage, psychological disorder, or spiritual crisis—can be understood as disturbances in the temporal coherence of conscious fields. Healing becomes a process of temporal re-attunement: restoring coherent and stable rhythmic relationships within and between conscious systems.

Contemplative practices across cultures can be understood as technologies for cultivating temporal coherence. Meditation, prayer, music, dance, ritual, and other practices may facilitate what we might call *chronosynthesis*—the integration of multiple temporal scales into harmonious conscious experience. Such practices work not merely through psychological suggestion but through literal restoration of temporal coherence within embodied electromagnetic fields and other rhythms of life (Hunt, 2020; Young, Hunt & Ericson, 2022).

5. Relational Ontology and the Participatory Universe

The shift toward a process-relational understanding of reality fundamentally transforms our conception of self, world, and cosmos. At the heart of this transformation lies the recognition that being itself is irreducibly relational. Entities do not exist as self-contained substances that subsequently enter into relationships; rather, they arise through and as their relational processes (Whitehead, 1929; Barad, 2007; Harman, 2018). This insight finds its most rigorous philosophical development in Whitehead's metaphysics of actual occasions and its most promising empirical elaboration in resonance-based theories of consciousness that place relational dynamics at the center of mental phenomena.

Whitehead's revolutionary insight involved recognizing that the fundamental units of reality are not substances but processes—"actual occasions of experience" that exist only in and through their "prehensive" relationships with other occasions (Whitehead, 1929, pp. 18-19). Each occasion is simultaneously subject and superject: an experiencing entity that feels other occasions while contributing itself as datum for future experience. Reality thus unfolds as a vast web of experiential relationships wherein every moment of existence represents both a creative synthesis of past inheritances and a novel contribution to future becomings (Griffin, 1998; Sherburne, 1966).

General Resonance Theory mirrors this relational principle at the level of empirical investigation. In GRT, consciousness emerges not from the intrinsic properties of isolated components but from their dynamic coupling and mutual entrainment across multiple temporal and spatial scales (Hunt & Schooler, 2019). Neural oscillations, electromagnetic fields, and other biological rhythms achieve conscious coherence through what systems theorists call "phase-locking" or "cross-frequency coupling" or "frequency entrainment"—processes wherein separate oscillators adjust their frequencies and phases in mutual response until they achieve resonant alignment (Strogatz, 2003; Pikovsky et al., 2001).

The resulting conscious field cannot be localized to any particular neural structure or brain region. Instead, it represents what we might term a "distributed process"—a pattern of coherent activity that depends on ongoing information and energy exchange across multiple organizational levels (Hunt & Jones, 2023). This empirical finding supports Whitehead's metaphysical insight that experience is always relational, always co-constituted through interaction rather than possessed by isolated subjects.

This mutual co-constitution challenges traditional epistemological distinctions between subject and object, knower and known, observer and observed. As Karen Barad (2007) argues through her theory of "agential realism," measurement and observation do not reveal pre-existing properties of independent objects but participate in the very constitution of what appears. The boundaries between measuring apparatus and measured phenomenon emerge through what she calls "intra-action"—a

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neologism intended to emphasize that relata do not precede their relations but are constituted through them.

Such insights align with both ancient wisdom traditions and contemporary developments in feminist epistemology, phenomenology, and decolonization theory, all of which emphasize the situated, embodied, and participatory character of knowledge (Haraway, 1988; Merleau-Ponty, 1945; Anzaldúa, 1987). Indigenous cosmologies frequently portray reality as an interconnected web of kinship relationships rather than a collection of discrete objects (Kimmerer, 2013; Cajete, 2000). The Lakota phrase *mitakuye oyasin*—"all my relations"—expresses not merely an ethical commitment but an ontological recognition that individual existence is always embedded within and constituted through broader relational networks.

From this perspective, consciousness represents not something that subjects possess but something that emerges in relational events themselves. Each moment of awareness constitutes what we might call "participatory knowing"—an embodied engagement with the world that simultaneously shapes and is shaped by what it encounters (Abram, 1996; Varela et al., 1991). Because resonance underlies this participatory engagement in GRT's framework, consciousness becomes a function of relational depth and breadth rather than computational complexity.

This relational understanding carries significant ethical implications. If experience pervades nature and emerges through relational processes, then ethical consideration must extend beyond humans and other obviously sentient beings to encompass the broader relational networks that sustain conscious experience (Mathews, 1991; Plumwood, 1993). Moral action becomes less a matter of following abstract principles than of cultivating what we might call "relational wisdom"—the capacity to enhance resonance and reduce dissonance within the interconnected web of experience.

Love, from this perspective, represents not merely a psychological phenomenon but an ontological force—what I'm calling *eros*—that drives the evolution of increasingly rich and beautiful forms of relational integration. Ethical development involves learning to participate more skillfully in this cosmic process of creative relationship-formation (Whitehead, 1929, p. 346; Griffin, 1998).

The epistemological implications prove equally significant. If knowledge emerges through participatory engagement rather than detached observation, then objectivity must be reconceived as a relational achievement rather than a matter of removing the subject from the equation (Daston & Galison, 2007). Scientific objectivity becomes a function of how transparently and rigorously we participate in the phenomena we seek to understand—a form of "strong objectivity" that acknowledges the situated character of all knowledge claims while maintaining commitments to empirical accountability (Harding, 1991).

Finally, this participatory ontology reshapes theological and spiritual understanding. Rather than conceiving divinity as an omnipotent external creator, process-relational thought suggests that eros is the immanent lure toward greater beauty, intensity, and relational richness that operates from within the temporal process rather than above it (Whitehead, 1929, p. 346; Griffin, 2001). This vision of participatory divinity finds expression in contemporary movements toward ecological spirituality, feminist theology, and indigenous wisdom traditions that emphasize the sacred character of relational engagement itself (McFague, 1993; Christ, 1997; Deloria, 1973).

6. Conclusion: Toward a Physics of Love

Our exploration has traced a comprehensive metaphysical and scientific vision wherein consciousness emerges not as an accidental byproduct of material complexity but as a fundamental expression of an erotic cosmos operating through relational processes across all scales of reality. By integrating insights from Whiteheadian process philosophy, General Resonance Theory, electromagnetic field theories of consciousness, and contemporary developments in quantum mechanics and neuroscience, I have outlined a "physics of love"—a cosmological framework that places relational creativity, temporal becoming, and aesthetic experience at the ontological center of reality.

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Central to this vision is a reconceptualization of eros not as a cosmic desire but as the fundamental attractive quality inherent in every constituent of reality, from quantum events to complex conscious beings. Rather than attributing anthropomorphic consciousness or eros to the universe as a whole, we locate the source of cosmic creativity in the basic polarity present in all actual entities—their inherent orientation toward certain relationships over others, toward integration over isolation, toward greater experiential intensity over mere repetition. In Whitehead's philosophical framework, this manifests through what he called the "Primordial Nature" of God—the eternal source of creative possibilities that lures each actual occasion toward aesthetic satisfaction (Whitehead, 1929, p. 346). In GRT's empirical framework, it appears as the tendency of oscillatory systems toward resonant coupling and coherent field formation (Hunt & Schooler, 2019). The universe is a creative advance into novelty not because it possesses desires like a conscious subject, but because its fundamental constituents exhibit this basic attractive-repulsive polarity that, when aggregated across countless micro-interactions, generates the evolutionary creativity we observe throughout cosmic history.

The implications of this erotic cosmology extend across multiple domains of inquiry. First, we must fundamentally reframe the relationship between mind and matter. Consciousness is neither "in" the brain as a spatial container nor simply an emergent property of neural computation. Rather, awareness manifests as resonant fields formed through coherent coupling among oscillatory systems operating across biological, energetic, and environmental scales (Hunt & Jones, 2023). The embodied organism functions not as a biological machine but as a kind of resonance instrument—a complex temporal structure evolved through billions of years to sustain and enrich the symphony of conscious experience.

Second, we must embrace temporality not as a background parameter or phenomenological illusion but as the fundamental medium through which consciousness actualizes itself. Eros is time's embrace. Time is the rhythm of cosmic eros—the cadence through which creative relationship-formation unfolds (Whitehead, 1929; Bergson, 1896). Our personal and collective development occurs not through deterministic laws but through the dynamic interplay of inherited rhythms with emergent possibilities. Healing, growth, creativity, and spiritual development all represent temporal processes grounded in the restoration and enhancement of resonant coherence across multiple scales of embodied experience.

Third, we must acknowledge that we inhabit a participatory universe wherein observer and observed, knower and known, self and world co-emerge through relational processes (Barad, 2007; Varela et al., 1991). We are not detached observers standing apart from a mechanical cosmos but are, instead, participants in an ongoing creative unfolding that we simultaneously influence and are influenced by, now and always. Consciousness is always consciousness-of-a-world; knowledge is always co-created through embodied engagement; reality is always emerging through interaction. Ethics thus becomes less a matter of rule-following than of relational artistry—learning to participate skillfully in the cosmic process of creative relationship-formation.

Finally, we are called to recognize that love may constitute the fundamental structure of physical reality rather than representing a merely human addition to an otherwise loveless cosmos. A "physics of love" involves more than sentimental metaphor—it requires recognizing that the same principles governing quantum entanglement, electromagnetic field coherence, and biological resonance also govern the formation of meaning, beauty, and relational depth across all scales of experience. What binds quarks into protons, atoms into molecules, molecules into cells, cells into organisms, organisms into ecosystems, and ecosystems into the biosphere? What drives the creative advance from cosmic simplicity toward biological complexity, from molecular replication toward cultural evolution, from mechanical causation toward meaningful relationship? I propose that the answer involves eros—cosmic love understood as the universe's inherent tendency toward creative relationship-formation.

This vision remains speculative, of course, as must any comprehensive metaphysical framework that attempts to integrate empirical findings with lived experience and ethical concerns. Yet such speculation represents a necessary dimension of both scientific and philosophical inquiry. As

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Whitehead observed, "Philosophy begins in wonder and ends in wonder" (Whitehead, 1938, p. 168). The time seems ripe for new metaphysical frameworks capable of integrating the findings of contemporary science with the depths of human experience and the urgency of our ecological and social crises.

By integrating process-relational philosophy, resonance theory, electromagnetic field dynamics, and participatory epistemology, we may be approaching a paradigm shift toward understanding the universe as fundamentally loving—not in the sense of possessing anthropomorphic consciousness, but as structured through attractive relationships, guided by aesthetic lures toward greater experiential richness, and evolving toward increasingly sophisticated forms of conscious integration.

Most fundamentally, it may require what we might call a *reenchantment* of our scientific worldview—not through abandoning empirical rigor but through expanding our conception of what counts as real to include the qualitative, experiential, and aesthetic dimensions of existence that both process philosophy and consciousness research reveal as irreducible features of cosmic evolution (Griffin, 1988; Weber, 1946/2004). In an erotic cosmos, science itself becomes an ongoing form of love—a passionate engagement with the creative mystery of existence that seeks understanding not for the sake of control but for the deeper intimacy it makes possible.

We need not claim that the universe *is* conscious in an anthropomorphic sense, only that it exhibits the fundamental characteristics we associate with consciousness: experiential responsiveness, creative synthesis, and directional development guided by aesthetic lures. The universe is *becoming* conscious through the evolution of increasingly sophisticated forms of resonant integration, guided by primordial possibilities that themselves exhibit the basic structure of consciousness.

Human consciousness represents not an anomalous exception to natural law but the flowering of capacities present throughout nature in simpler form. Eros manifests not as cosmic desire but as the fundamental attractive polarity that drives creative relationship-formation at every scale. And time reveals itself not as the enemy of being but as the temporal rhythm through which the universe's Consequent Nature—the sum of all actualized experiences—evolves toward forms of resonant integration that may eventually deserve the designation of *cosmic consciousness*. This is what I mean by eros as time's embrace.

Acknowledgments: The author thanks Prof. Jonathan Schooler for many years of collaboration and dialogue that have profoundly shaped the development of General Resonance Theory and the broader metaphysical synthesis presented here. His insight, openness, and intellectual generosity have been invaluable in refining both the scientific and philosophical dimensions of this work. The author also thanks the editors and anonymous reviewers of the *Journal of Consciousness Studies* for their thoughtful and constructive feedback, which strengthened the final version of this paper.

References

1. Abram, D. (1996). *The spell of the sensuous: Perception and language in a more-than-human world*. Pantheon Books.
2. Anzaldúa, G. (1987). *Borderlands/La frontera: The new mestiza*. Aunt Lute Books.
3. Aspect, A., Dalibard, J., & Roger, G. (1982). Experimental test of Bell's inequalities using time-varying analyzers. *Physical Review Letters*, 49(25), 1804-1807.
4. Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.
5. Bell, J. S. (1964). On the Einstein Podolsky Rosen paradox. *Physics Physique Fizika*, 1(3), 195-200.
6. Bergson, H. (1896/1991). *Matter and memory*. Zone Books.
7. Bohm, D. (1980). *Wholeness and the implicate order*. Routledge.
8. Cajete, G. (2000). *Native science: Natural laws of interdependence*. Clear Light Publishers.
9. Chalmers, D. J. (1996). *The conscious mind: In search of a fundamental theory*. Oxford University Press.
10. Chalmers, D. J. (2017). The combination problem for panpsychism. In G. Brüntrup & L. Jaskolla (Eds.), *Panpsychism: Contemporary perspectives* (pp. 179-214). Oxford University Press.

 doi:10.20944/preprints202510.0528.v1

11. Christ, C. P. (1997). *Rebirth of the goddess: Finding meaning in feminist spirituality*. Addison-Wesley.
12. Daston, L., & Galison, P. (2007). *Objectivity*. Zone Books.
13. Dehaene, S. (2014). *Consciousness and the brain: Deciphering how the brain codes our thoughts*. Viking.
14. Deloria, V. (1973). *God is red: A native view of religion*. Fulcrum Publishing.
15. Einstein, A. (1916). Die Grundlage der allgemeinen Relativitätstheorie. *Annalen der Physik*, 49(7), 769-822.
16. Einstein, A., Podolsky, B., & Rosen, N. (1935). Can quantum-mechanical description of physical reality be considered complete? *Physical Review*, 47(10), 777-780.
17. Fries, P. (2015). Rhythms for cognition: Communication through coherence. *Neuron*, 88(1), 220-235.
18. Goff, P. (2017). *Consciousness and fundamental reality*. Oxford University Press.
19. Goff, P. (2023). *Galileo's Error: Foundations for a new science of consciousness.* Vintage Books.
20. Griffin, D. R. (1988). *The reenchantment of science: Postmodern proposals*. SUNY Press.
21. Griffin, D. R. (1998). *Unsnarling the world-knot: Consciousness, freedom, and the mind-body problem*. University of California Press.
22. Griffin, D. R. (2001). *Reenchantment without supernaturalism: A process philosophy of religion*. Cornell University Press.
23. Grossberg, S. (2017). Towards solving the hard problem of consciousness: The varieties of brain resonances and the conscious experiences that they support. *Neural Networks*, 87, 38-95.
24. Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*, 14(3), 575-599.
25. Harding, S. (1991). *Whose science? Whose knowledge? Thinking from women's lives*. Cornell University Press.
26. Harman, G. (2018). *Object-oriented ontology: A new theory of everything*. Pelican Books.
27. Hunt, T. (2011). Kicking the psychophysical laws into gear: A new approach to the combination problem. *Journal of Consciousness Studies*, 18(11-12), 96-134.
28. Hunt, T. (2020). Calculating the boundaries of consciousness in general resonance theory. *Journal of Consciousness Studies*, 27(11-12), 55-80.
29. Hunt, T. (2025). *Schrödinger's Dream: A New Wave-Based Approach to Unified Field Theory* [Preprint]. Preprints.org. https://doi.org/10.20944/preprints202509.2529.v1
30. Hunt, T., & Jones, M. (2023). Fields or firings? Comparing the spike code and the electromagnetic field hypothesis. *Frontiers in Psychology*, 14, 1029715.
31. Hunt, T., & Schooler, J. W. (2019). The easy part of the hard problem: A resonance theory of consciousness. *Frontiers in Human Neuroscience*, 13, 378.
32. Husserl, E. (1905/1991). *On the phenomenology of the consciousness of internal time*. Kluwer Academic Publishers.
33. Irigaray, L. (1993). *An ethics of sexual difference*. Cornell University Press.
34. Kimmerer, R. W. (2013). *Braiding sweetgrass: Indigenous wisdom, scientific knowledge, and the teachings of plants*. Milkweed Editions.
35. Kristeva, J. (1987). *Tales of love*. Columbia University Press.
36. Mathews, F. (1991). *The ecological self*. Routledge.
37. McFadden, J. (2002). The conscious electromagnetic information (cemi) field theory: The hard problem made easy? *Journal of Consciousness Studies*, 9(8), 45-60.
38. McFague, S. (1993). *The body of God: An ecological theology*. Fortress Press.
39. Merleau-Ponty, M. (1945/2012). *Phenomenology of perception*. Routledge.
40. Minkowski, H. (1908). Raum und Zeit. *Physikalische Zeitschrift*, 10, 75-88.
41. Nagasawa, Y., & Wager, K. (2016). Panpsychism and priority cosmopsychism. In T. Alter & Y. Nagasawa (Eds.), *Consciousness in the physical world: Perspectives on Russellian monism* (pp. 113-129). Oxford University Press.
42. Nagel, T. (1974). What is it like to be a bat? *The Philosophical Review*, 83(4), 435-450.
43. Pikovsky, A., Rosenblum, M., & Kurths, J. (2001). *Synchronization: A universal concept in nonlinear sciences*. Cambridge University Press.
44. Plumwood, V. (1993). *Feminism and the mastery of nature*. Routledge.

 doi:10.20944/preprints202510.0528.v1

45. Pockett, S. (2012). The electromagnetic field theory of consciousness: A testable hypothesis about the characteristics of conscious as opposed to non-conscious fields. *Journal of Consciousness Studies*, 19(11-12), 191-223.
46. Schneider, S., & Bailey, M. (2024). Superpsychism. *Journal of Consciousness Studies*, 31(3), 45-78.
47. Schooler, J. W., Hunt, T., & Schooler, J. N. (2011). Reconsidering the metaphysics of science from the inside out. In *Neuroscience, consciousness and spirituality* (pp. 157-194). Dordrecht: Springer Netherlands.
48. Sherburne, D. W. (1966). *A key to Whitehead's Process and Reality*. Macmillan.
49. Sherburne, D. W. (1967). Whitehead without God. *The Christian Scholar*, 50(3), 251-272.
50. Skrbina, D. (2005). *Panpsychism in the West*. MIT Press.
51. Strawson, G. (2006). Realistic monism: Why physicalism entails panpsychism. *Journal of Consciousness Studies*, 13(10-11), 3-31.
52. Strogatz, S. (2003). *Sync: How order emerges from chaos in the universe, nature, and daily life*. Hyperion.
53. Tononi, G. (2012). Phi: A voyage from the brain to the soul. Pantheon Books.
54. Varela, F. J., Thompson, E., & Rosch, E. (1991). *The embodied mind: Cognitive science and human experience*. MIT Press.
55. Weber, M. (1946/2004). *The vocation lectures*. Hackett Publishing.
56. Wheeler, J. A., & DeWitt, B. S. (1967). Battelle rencontres: 1967 lectures in mathematics and physics. Benjamin.
57. Whitehead, A. N. (1929). *Process and reality: An essay in cosmology*. Macmillan.
58. Whitehead, A. N. (1938). *Modes of thought*. Macmillan.
59. Young, A., Hunt, T., & Ericson, M. (2022). The slowest shared resonance: A review of electromagnetic field oscillations between central and peripheral nervous systems. *Frontiers in Human Neuroscience*, 15, 796455.