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Beyond the Body: Consciousness, Mitochondria, and the Cognitive Horizon of Birth and Technology



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Abstract

Consciousness is often regarded as the pinnacle of human evolution; yet, its origins and future trajectories remain shrouded in mystery. This paper examines the hypothesis that consciousness emerged as an unintended by-product of the energy surplus generated by mitochondrial endosymbiosis, which enabled the rise of complex, multicellular life. The reward of unprecedented biological complexity, alongside the burden of demise and deterioration, arose from this energetic revolution. As consciousness matured, it evolved beyond its origins in survival to encompass abstract reasoning, social awareness, and the contemplation of death. This paper examines the scope of consciousness, tracing its roots from evolutionary biology to speculative digital futures. In an era of artificial intelligence and neurotechnology, we investigate whether a second evolutionary symbiosis—between organic minds and digital systems—might usher in new forms of awareness, potentially liberated from the biological constraints that once gave rise to it. In parallel, this review reframes the experience of human birth not only as a biological necessity but also as a gateway into altered states of awareness—thresholds as expansive and profound as those offered by technology.

Keywords: Consciousness; Childbirth; Mitochondria; Endosymbiosis; Altered states; Neurotechnology; Artificial intelligence; Evolutionary biology

Introduction

Mitochondria enabled complexity. Complexity gave rise to consciousness, and in turn, consciousness revealed its ability to see beyond the ordinary. This paper begins with one such moment during childbirth.

"I was no longer connected to the room. There was a silence, an incredible sense of calm. I could sense everything—the room, my breath, my heartbeat. Time stood still. I was in a place I had never been before. I was removed from everything. There was a sense of floating without boundaries. It was incredibly calm and peaceful. I remember looking down as I hovered over my body, watching myself from above, as if I were two separate beings. I felt so loved. Fearless. I have never felt like this—the beauty, the purity, and bliss. A new awareness of my existence came over me. It was as if I had gained clarity and the answers to life's many questions. Everything was exposed in its truest form. I knew why I was here and what I was born to do. I was here to create."

Such accounts, resulting from the crucible of childbirth, are relatively common. In moments of extreme physiological intensity, emotional openness, and hormonal transition, labouring women may report sensations that closely resemble out-of-body experiences, near-death states, and deep meditative trances [1,2]. These are not merely subjective oddities; they imply that childbirth may act as a unique threshold in human consciousness—a biologically rooted yet cognitively expansive portal.

We begin with this obstetric grounding to situate consciousness within and beyond lived experience, arguing that birth embodies the convergence of evolutionary biology, cellular energy, and cognitive transcendence. From mitochondrial origins to dream states, from trauma to neurotechnology, we move beyond the stirrings of awareness, beyond consciousness as a biological precedent, to consider whether it may persist in subtle, experiential tangents that hint at a more expansive form of being, untethered from physical life itself.

Discussion

The mitochondrial genesis of complexity

Roughly two billion years ago, a pivotal event reshaped the course of evolution: a prokaryotic host cell engulfed a proteobacterium that eventually became the mitochondrion. Endosymbiosis enabled oxidative phosphorylation, a ground-breaking leap in energy production [3]. Unlike the limited yields of glycolysis and anaerobic metabolism, this new process provided an energy surplus that laid the foundation for biological complexity [4].

This abundance allowed cells to grow larger, develop intricate intracellular machinery, and store more genetic information. Over time, this led to the emergence of eukaryotic cells [5]. However, this evolutionary advantage came at a cost. The byproducts of mitochondrial metabolism, reactive oxygen species (ROS), are harmful, causing cellular and DNA damage known as oxidative stress [6]. Such cellular damage contributes to the aging process and the development of degenerative diseases.

It was, metaphorically, the biological equivalent of Eve's bite from the Tree of Knowledge. The engulfment of the mitochondrion by a prokaryotic ancestor was a pivotal event in the history of life. This tryst granted extraordinary power but also seeded a curse of inevitable sorrow. From this act came energy, complexity, and, eventually, consciousness; but so too, the spoil of decay. Just as Eden's fruit awakened human awareness while casting us from innocence, this cellular merger bestowed vitality while embedding mortality into the very structure of life. From that moment forward, existence carried both genius and grief: the capacity to create and the certainty of decline.

In response, life evolved new defences: antioxidant systems, DNA repair mechanisms, programmed cell death (apoptosis), and cellular cooperation. These adaptations drove the emergence of multicellularity and, subsequently, the evolution of nervous systems—the foundation on which consciousness could emerge [3,5].

Complexity demanded more than mere cellular coordination—it necessitated renewal. Sexual reproduction emerged as a potent evolutionary strategy, shuffling genes to mend damage and outpace mutation. Gender, as a biological construct, followed suit, shaping the pathways through which life diversified, adapted, and reproduced. With this came childbirth: not just a reproductive endpoint but a biological and existential threshold.

The roots of consciousness are not separate from cellular biology; they are deeply entwined with the mitochondrial energy economy that powers complexity [3]. Mitochondria provided life with the fuel to expand and complexify—but also burdened it with decay and death. One cannot exist without the other. However, what mitochondria created—a conscious mind capable of memory, longing, and foresight—has not only endured but also turned its gaze beyond. Consciousness, born from this paradox,

appears drawn to escape biological confines. Whether through altered states or artificial systems, the drive to outpace decay may be an evolutionary inheritance [7,8].

Childbirth: the cognitive threshold

Labour and childbirth are profound physiological and psychological events capable of inducing altered states of consciousness. During the intensity of labour, some women report experiences akin to out-of-body states, heightened awareness, or a sense of timelessness. Far from being pathological, these phenomena may reflect natural expansions of awareness catalysed by deep transformation [9].

"In the most intense hours of labour, I became mindless, floating in boundless space between contractions. All thoughts receded. My mind plummeted into an immense silence bathed in love and well-being. I felt a oneness with all mothers who had ever birthed."

Such experiences, reported by up to 10% of birthing women, often involve a narrowed external focus, distorted time perception, and heightened inner awareness [9]. Perhaps this milieu—physical, emotional, and hormonal—opens the mind to extraordinary states of expanded consciousness. In evolutionary terms, even prey animals may show a similar shift: under extreme threat, they might enter tonic immobility—a frozen, altered state that resembles the dissociative, detached quality reported in both trauma and childbirth. These mechanisms suggest that consciousness may not simply fragment under profound duress, but rather momentarily detach from ordinary perception [10].

In these moments, where awareness stretches beyond its boundaries, there may be echoes of a deeper remembering. Childbirth, paradoxically, may offer a fleeting return to the garden from which consciousness was cast. If the merger of mitochondria marked our biological exile, then perhaps birth, raw, luminous, and transcendent, represents one of the last remaining doorways through which we glimpse that lost Eden. Not a return to innocence, but to integration: a moment where mind, body, and the generative power of life briefly converge in clarity.

These narratives invite us to reconceptualise childbirth as a physiological act and an existential rapture—a portal through which consciousness may briefly unfasten from its physical boundaries. In this light, birth is not merely the beginning of a new life—it is a threshold that connects biology to the power of transcendent awareness.

The emergence of consciousness as integration

Consciousness likely evolved as a survival tool to integrate sensory input and coordinate bodily actions in real-time. The brain evolved into a prediction machine, enabling early organisms to detect threats, find resources, and respond effectively to their environments. As nervous systems became increasingly complex, so did the functions of consciousness [11]. Awareness broadened to encompass memory, anticipation, social learning, and abstract thought. Narrative memory and symbolic communication allowed

for mental rehearsals of choices and envisioned futures—realities yet to be experienced. Social skills required even more: empathy, deception, and cooperation. Symbolic cognition—the capacity to manipulate abstract representations—emerged as a survival tool and a practice space for identity, meaning, and myth [11]. The ability to model the interactions of others and navigate complex social structures elevated consciousness into a relational and reflective phenomenon.

Nevertheless, even at its most abstract, consciousness remains rooted in the body, relying on sensory input and limited by the structure of neural tissue. Only in states of intense experience—such as birth, trauma, or near-death—do we catch a glimpse of its potential to extend beyond physical boundaries [12].

Non-ordinary states and the edges of the self

Experiences similar to those of childbirth occur in other high-intensity contexts. Near-death experiences, trauma, meditation, and psychedelic states often involve dissociation, floating sensations, timelessness, or unity with a larger whole. As mentioned, prey animals in extreme duress may enter a state of tonic immobility—a precursor to human dissociation. What evolved as a defence may now serve as a doorway to broader modes of awareness [13]. The recurrence of these altered states across contexts—birth, death, crisis, and contemplative practice—suggests something more than mere coincidence. It may reveal an innate tendency within consciousness to reach beyond the limits of biology. In seeking escape, the mind is not retreating from harm but rather attempting to transcend it.

Authors such as Raymond Moody and Eben Alexander have documented near-death experiences (NDEs) in which individuals describe awareness during periods of minimal brain activity [14]. Viktor Frankl, amid traumatic deprivation, described observing himself from a distance—a psychological shift that may have aided survival [15]. Today, meditation, breathwork, and psychedelics reopen these ancient doors of perception, not as fringe phenomena but as frontiers where altered states are not anomalies but premonitions—signposts that consciousness can exist in architectures beyond waking cognition. Perhaps these states—glimpsed during childbirth, trauma, and dreams—are not aberrations but rehearsals. The mind, confronted with the body's frailty, reaches for states where it might persist unbound.

The Dreaming brain and the mitochondrial load

Dreaming, especially during REM sleep, offers yet another profound experience of altered consciousness. REM states are paradoxical: the body is paralysed, yet the brain is intensely active, engaging in one of the most energy-demanding cognitive states known, sustained by the high metabolic output of mitochondria [16]. This surge of neural activity supports complex symbolic processing, emotional rehearsal, and narrative simulation. Many theorists propose that dreaming evolved not merely as a by-

product of sleep but as a virtual rehearsal space—a cognitive sandbox where the brain tests responses to threat, loss, desire, and novelty, all while the body rests. In this sense, dreams may represent a uniquely energy-intensive investment in psychological adaptation and anticipatory survival [16].

Robert Monroe's work on lucid and out-of-body states supports the idea that dreaming is not a passive phenomenon but can be consciously cultivated and expanded. His research suggests that with practice, individuals can learn to navigate dreamscapes deliberately, transforming involuntary imagery into a kind of inner theatre where intention shapes experience [17]. In this view, dreaming becomes a liminal space where unconscious material meets voluntary cognition. This fluid boundary reveals how awareness can stretch, shift, and evolve beyond the constraints of ordinary waking thought. Such states may reflect neuroplasticity and hint at untapped dimensions of consciousness—possibilities for sentience and experience that extend beyond the physical body and into forms of being we've only begun to imagine.

If dreaming remains one of the brain's most energy-intensive states—powered by mitochondria—then perhaps it signifies not just the rehearsal of life but a peak expression of our energy-rich inheritance: a nightly reminder that consciousness evolved not only to respond and react, but to reach outwards.

Toward digital consciousness and technological symbiosis

The same mitochondria that once gave rise to consciousness also set the timer for its decline. In their wake came aging, fragility, and death. However, from that same crucible, consciousness emerged—not content merely to exist but compelled to evolve. Today, following in the footsteps of that ancient mitochondrial merger, we are approaching a new kind of symbiosis—between organic consciousness and digital systems. Just as mitochondria once enabled the leap to complex, energy-hungry thought, artificial intelligence and neurotechnology may now offer a path to extend and transform that awareness beyond its biological roots, ushering in an era where the architecture of the mind is no longer limited to the body [18].

Technology, AI, and digital cognition may not lead us back to paradise, but they may offer something even more audacious: redemption. If the bite of a mitochondrion was life's first transgression—one that bestowed knowledge yet seeded the curse of decay and turmoil—then technology marks a path not of return but of reinvention. It gestures not toward Eden but towards an entirely new horizon: a frontier shaped by the genius of mind and consciousness. Brain-computer interfaces enable thoughts to control external devices, bypassing speech and movement, and thereby blur the line between mind and machine. Artificial intelligence reflects and extends human cognition—recognising patterns, simulating reasoning, and generating novel ideas [18].

Meanwhile, fields like connectomics aim to map the very architecture of thought. If memory, identity, and consciousness stem from specific patterns of neural activity, then those patterns could be digitised, preserved, or even transferred [19]. Within this framework, consciousness is no longer tied to tissue; it becomes a property or quality of the information flow. This raises profound possibilities: If identity is a pattern, can it be copied? If memory is code, can it be edited? Furthermore, if digital substrates can support sentience, perhaps awareness may one day outlive the body, free to evolve through code, just as it once evolved through cells.

AI might not be conscious—yet—but the way it performs tasks once thought uniquely human and its potential to do so beyond the constraints of the body, heralds a new kind of mind and experiential capacity: one not bound by biology, but capable of existing in ways not previously possible [20].

In this context, non-ordinary states of consciousness—induced by birth, dreaming, trauma, or technology—begin to appear less as anomalies and more like previews of evolution. They may represent early access points into modes of awareness that transcend the physical, pointing not only backward to biology's past but also forward to consciousness unbound.

From artifact to architect

Once a passive outcome of biology, consciousness now reshapes its origins. Humans actively craft their cognitive future through genetic engineering, neurotechnology, and cultural imagination. The same mitochondria that enabled complexity have also seeded the desire to transcend it. Each altered state reminds us that consciousness is malleable, expansive, and evolving. In this light, we are not merely conscious beings—we are becoming architects of awareness [21].

Recognising childbirth as a potentially altered state of consciousness invites a more holistic approach to maternal care. The moments women describe—of floating, timelessness, or deep inner clarity—are not merely poetic flourishes but may reflect a natural expansion of the mind during physical transformation. At the very least, these experiences may carry implications for trauma-informed care, respectful support, and a new psychological framing of labour [22].

If birth can serve as a cognitive threshold—a portal rather than just a process—then midwives, obstetricians, and birth workers might reflect on how best to protect and honour that threshold. By doing so, we create space not only for safety but also for meaning—and for the continuation of an evolutionary lineage etched across generations of mothers, babies, and newly born minds.

Conclusion

The pilgrim soul

Mitochondria enabled life to become complex. In their wake, consciousness emerged—an ephemeral, almost intangible quality of being that would come to define the human experience. Mitochondria made us mortal, but they also made us visionary. In the light of consciousness, from cell to self to circuit, perhaps we're seeing the next evolutionary gamble: a bid not for retreat or escape but to endure.

Over time, consciousness may evolve from mere accident to deliberate architect, reconstructing itself through intelligence and intention, embracing longevity and expansion into states we currently glimpse only in technology, birth, trauma, and dreams. These futuristic and non-ordinary states of being suggest something entirely different: a consciousness unshackled from its moorings, one that soars beyond the flesh and transcends the curse that initially summoned it.

With every birth, a pilgrim soul reborn returns—to feel, to create, to question. This quest, this yearning, reminds us that consciousness is not a static entity. It's not merely something we have but something we become, just as birth brings one life from another in that same eventuality of change. In this, we glimpse a deeper evolutionary rhythm—one in which consciousness, forged in a body that dies, dares to endure and transcend the pact that made it possible. In that becoming, we glimpse not a return to a garden of what once was, but an escape, a reimagining of life that fares far beyond it.

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