PROLOGUE: QUESTIONS OF CONSCIOUSNESS

In the summer of 2018, a young orca named Tahlequah[1] gave birth in the waters off the Pacific Northwest. When her calf died within hours, she did something that captivated millions around the world. Using her rostrum and flippers, she carried her baby's body through the ocean for seventeen days and over a thousand miles, refusing to let go. She balanced the small corpse on her head as she swam, dove to retrieve it when it slipped away, and pushed it gently through the waves while her pod waited, watched, and accompanied her in what could credibly be called a funeral procession.

The images spread rapidly across social media and news outlets. People everywhere followed her story, many moved to tears by something they recognized immediately and viscerally. They saw a mother's love, a parent's refusal to accept loss—an expression of mourning that felt intimately familiar despite emanating from a being whose world we can scarcely imagine. For seventeen days, millions of us shared in Tahlequah's vigil, connecting emotionally to what she seemed to be experiencing as she pushed through the waves to the point of exhaustion.

Some commentators dismissed this response as mere anthropomorphism—we were projecting human emotions onto animal behavior, interpreting it as grief when, they argued, we had no evidence that orcas grieve as we do. Zoologist and author Jules Howard wrote:

> Pedantic (and blunt) as it sounds, if you believe J35 was displaying evidence of mourning or grief, you are making a case that rests on faith not on scientific endeavour, and that makes me uncomfortable as a scientist.[2]

Some took this as a cautionary tale about the risks of emotional projection. Emotion can mislead, they argued—but dismissing emotion outright can be its own kind of blindness. The tension between these impulses is not merely scientific; it reflects deeper assumptions about how we interpret minds other than our own.

Researchers who study animal behavior strongly challenged Howard's view. As Barbara King, a biological anthropologist who has studied animal grief for years, put it:

> "I am as sure as I can be in a scientific framework that there's an expression here of her sorrow. We know by now that animal joy, animal sorrow, animal fear, animal happiness, animal grief, the whole gamut exists. So these emotions don't (just) belong to humans."[3]

Mark Bekoff, a behavioral ecologist, put it even more directly:

> There is no doubt that many animals experience rich and deep emotions. It's not a matter of if emotions have evolved in animals but why they have evolved as they have. We must never forget that our emotions are the gifts of our ancestors, our animal kin. We have feelings and so do other animals.[4]

These conflicting interpretations reveal something deeper than a disagreement about animal behavior—they expose fundamental differences in how we think about consciousness and how it has evolved on Earth. The facts—Tahlequah's seventeen-day vigil, her physical exhaustion, her pod's accompanying presence—are not in dispute. But how we interpret those facts, what we think they mean, reflects one of the most consequential questions we face: Is rich and complex consciousness a unique evolutionary accident in *Homo sapiens*, or might other species have evolved consciousness similarly rich, even if utterly alien to us?

This book begins with Tahlequah's vigil because it crystallizes a question that runs through every chapter that follows: What kinds of consciousness exist on this planet, and what does our answer reveal about the frameworks through which we grasp reality?

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[1] Tahlequah was the name given by The Whale Museum in Friday Harbor, Washington through their Adopt-a-Whale program. Marine biologists refer to her as "J35".

[2]]Jules Howard, "The 'grieving' orca mother? Projecting emotions on animals is a sad mistake," *The Guardian*, August 14, 2018.

[3] Canadian Press, January 18, 2025, quoting Barbara King.

[4] Mark Bekoff, "Grief, Mourning, and Broken-Hearted Animals," *Psychology Today*, November 26, 2011.

The presumption of human superiority runs deep in Western thought, shaping how decision-makers in industrialized societies relate to the natural world. This presumption appears in both dominant narratives of our time: traditional theism, which places humans at the apex of divine creation, and the modern secular view, which treats consciousness as an accidental byproduct of recent evolutionary history. Though grounded in opposing metaphysics, both converge on the same assumption: that human consciousness—particularly our capacities for abstraction and technology—represents the pinnacle of what consciousness can be.

But what if this assumption is wrong? What if we approached mind[5] not as accident but as fundamental aspect of nature—not claiming metaphysical certainty, but exploring where this framework leads? What if Earth has been home, for millions of years, to species whose consciousness is as rich as ours but organized according to completely different principles? And what if we're destroying these beings without ever recognizing what we're losing?

An Anomaly That Demands Attention

Tahlequah is an orca, one of about 75 species of Odontoceti, the toothed whales that include dolphins, porpoises, and sperm whales. Together with the other suborder, Mysticeti—approxiately 15 species of baleen whales—they form the cetaceans, the most species-rich lineage of marine mammals. Cetaceans are not merely the most successful marine mammals; they are the only mammalian lineage to have fully solved life in the open ocean, doing so early, completely, and with remarkable long-term stability. In many cetacean lineages, the fundamental body plan has remained largely unchanged for millions of years.

Remarkably, the body plans of many odontocete species include very large brains. Sperm whales have the largest brains on Earth, reaching about eight kilograms—roughly six times the mass of a human brain. Orca brains weigh around five kilograms, and the brains of several other odontocete species exceed humans in absolute size. Moreover, they have been this way for millions of years: Tahlequah's ancestors were thriving in the oceans when the earliest proto-humans were only beginning to walk upright.

This is not a trivial curiosity. Many large-brained cetacean lineages evolved along distinct evolutionary paths, independently elaborating both their body plans and their brains. And unlike large terrestrial mammals, these lineages have remained morphologically stable for millions of years, with more recent evolutionary change expressed primarily through social organization, behavior, and culture.

Why? If consciousness is merely an accidental byproduct of neural complexity, as the standard materialist story suggests, why would evolution repeatedly invest in and sustain such metabolically intensive brain tissue? What purpose does all that neural architecture serve?

Behavioral evidence compounds the puzzle. Dolphins comprehend abstract concepts like "same" and "different." They recognize themselves in mirrors—a capacity once thought unique to humans, great apes, and elephants—and can report their own uncertainty during cognitive tasks, forms of metacognition that suggest genuine self-awareness. They understand both symbolic gestures and grammatical structure in ways that challenge our definitions of language. Odontocetes maintain distinct cultures and transmit cultural values across generations. And they demonstrate social bonding and networking rivaling that of humans.

Researchers in a 30-year study in coastal Australia have documented alliance networks among bottlenose dolphins that span hundreds of individuals over decades. These are not simple cooperative relationships but sophisticated, multi-tiered coalitions requiring individuals to track not just their own allies, but their allies' allies, navigating political landscapes that shift over years. Orcas maintain distinct cultural traditions—different hunting techniques, vocal dialects, and social practices—that are transmitted across generations and never shared even with neighboring populations whose territories overlap. Sperm whales, with their enormous brains, produce complex patterns of acoustic signals—codas—that function as cultural markers, with different clans maintaining different repertoires across ocean basins.

A Watery World of Sound

Cetaceans live in an acoustic world. Sound is the primary means by which they navigate, communicate, and perceive their world. Imagine living in their watery world: you are buoyant and move freely in three

[5] Or any similar term, such as spirit or Tao.

dimensions. You can see, but only dimly in the murky and deep water. Instead of vision, you "see" objects with precise acoustic signals you emit, an extremely sophisticated biosonar that reveals not only highly detailed exterior forms but also interior structures. Moreover, the mental "pictures" of the world around you are fully three-dimensional, formed not only from your own biosonar emissions, but also from your nearby conspecifics who are simultaneously generating their own acoustic imagery. You navigate, locate food, play with each other, and conduct your entire life in this cacophony of acoustic signals. At the same time, you're using other acoustic signals to communicate. Your social environment is complex: you form and dissolve alliances with dozens of individuals and maintain multi-tiered relationships over the course of decades. Any communication can be heard by everyone within acoustic range. There can be no secrets among dolphins.

What would it be like to live in such a radically different sensory world? While we cannot fully know the subjective nature of their consciousness, we know enough to conclude that many large-brained species have lives with many of the same characteristics as humans. They recognize themselves as individuals and follow cultural norms that are passed down through generations. They communicate in ways we are only beginning to understand and navigate social landscapes of remarkable complexity. And they have been doing all of this for millions of years longer than humans have existed.

The Umwelt: Constructing Realities

Neurobiologist Harry Jerison, whose pioneering work on brain evolution we'll explore in detail later, proposed that highly encephalized[6] brains don't merely process information—they actively construct species-specific realities. Biologists refer to these realities as the *umwelt*,[7] the subjective world an animal experiences. Contemporary neuroscience supports this insight through predictive processing and perceptual inference: brains continuously build and update internal models of the world, creating the reality an animal experiences. This applies to all animals, but the experienced worlds of large-brained species are far more complex due to their vastly greater information-processing capacities. And when species with such capacities also occupy fundamentally different sensory environments—acoustic three-dimensional ocean vs. visual terrestrial landscape—the resulting experiences are bound to be completely alien to each other.

Alien forms of consciousness are not necessarily primitive or inferior, but rather organized according to completely different principles. The neural architecture of odontocetes, both similar to and different from human brains, appears to have evolved to process simultaneous acoustic streams of object-related, social, and environmental information in ways that have no human parallel. Researchers in the Search for Extraterrestrial Intelligence (SETI) program have pointed out that technology is not the only measure of intelligence and cautioned that a techno-centric bias could prevent us from recognizing highly intelligent forms of life that never built sophisticated tools.[8] Laurance Doyle argues that the complexity and opacity of cetacean communication closely mirror what we could expect from extraterrestrial intelligence.[9]

The possibility emerges that these beings—stable across millions of years, possessing brains as large or larger than ours and demonstrating sophisticated social and cognitive abilities—may have developed forms of awareness as deep and meaningful as ours, even if organized by very different principles. They may even be our sentient equals: not identical minds, but a comparable richness and depth of interior experience, realized through neural architectures fundamentally different from our ours.

It is a possibility the dominant scientific model often makes difficult to see, not because scientists uniformly deny it, but because the model tends to foreground the measurable and the material while pushing interiority to the margins. If we assume that consciousness emerged accidentally from human-style abstraction, we are far less likely to recognize it in radically different forms.

But what if consciousness is not an accident? What if it's a fundamental dimension of reality that can be expressed in profoundly different ways?

[6] Jerison used the term "encephalized" to represent brains that were larger than expected for a given body size—what he called "excess brain tissue." We'll explore this concept and its implications further in Chapter 4.

[7] *Umwelt* is the term coined by Jakob von Uexküll, an early-20th-century biologist.

[8] Seth Shostak, *Confessions of an Alien Hunter*, 2009.

[9] Laurance R. Doyle et al., "Information theory, animal communication, and the search for extraterrestrial intelligence," *Acta Astronautica*, 2011.

The Framework Problem

We cannot seriously engage the question of cetacean consciousness without confronting the frameworks through which we decide what counts as a mind, and which minds count.

If the possibility of that orcas have a deep sense of interiority seems radical or implausible, that reaction itself is worth examining. Why does it feel so counterintuitive? Perhaps it is our inherited conceptual framework—the modern scientific worldview—that makes such possibilities difficult to see. If consciousness is merely an evolutionary accident, then cetacean extinction would be tragic but not cosmically significant. But if the evidence pointing toward an equivalence of interiority in other species is valid—if cetacean beings possess a form of consciousness potentially as rich as our own—then in their destruction we may be committing one of the great moral catastrophes of history. Our inherited framework may be preventing us from recognizing a cosmically equivalent form of consciousness that evolved millions of years before us. We may be destroying cognitive peers, perhaps even teachers, whose long existence could offer us lessons about sustainable intelligence.

So much depends, then, on one's worldview—the story one lives within. Psychologist Mark Koltko-Rivera defines a worldview as "a way of describing the universe and life within it, both in terms of what is and what ought to be." It is a conceptual framework that informs our perception of many topics, including "human nature, the meaning of life, and the composition of the universe itself."[10] Koltko-Rivera holds that each of us has a worldview, even when unconsciously held, as we cannot interpret reality without one. Most people have what he calls an "implicit" worldview, a collection of larger framework assumptions that we accept as true without ever examining them directly.

In later sections we'll further explore the idea of worldviews in the context of the human *umwelt* as well as our capacity to adopt a worldview deliberately. We'll also consider how the scientific framework has become so entrenched that for many scientists it is not merely one perspective among many, but the only framework capable of yielding a complete description of reality. Yet this framework is itself a fluid set of metaphors, models, and descriptions.

Modern cognitive science has shown that human beings do not merely use metaphors; we think through them.[11] Linguist George Lakoff and philospher Mark Johnson argue that metaphors are not decorative language but the basic neural and conceptual structures that allow us to make sense of the world. They argue that there is no fully objective point of view, and that the world revealed by science is constrained by the metaphors available to us.[12] At the level of the brain, metaphors function as mappings from concrete bodily experience—movement, balance, warmth, light—onto more abstract domains such as emotion, morality, time, and meaning. They are the deep grammar of interpretation.

This means that the stories we live within are not optional narratives we layer on top of facts. They are the architectural frameworks that determine which facts we notice, which we ignore, and what we take those facts to mean. A metaphor like "seeing is knowing" shapes everything from religious visions to scientific observation. A metaphor like "time is a resource" underlies entire economic systems. And a metaphor like "the universe is a machine" governs what modern culture treats as real, knowable, and important.

This is why Tahlequah's vigil provoked such conflicting responses. The disagreement was not about behavior or data; it was about the metaphors that structure our interpretations. To see the world through the metaphor of mechanism is to interpret her actions as biological reflex. To see it through metaphors of relationship or interiority is to interpret it as grief. Neither interpretation is simply "the facts." Both reflect the cognitive frameworks we inhabit. The challenge—and the opportunity—is to examine the overarching metaphors and be deliberate in which ones we choose to live by.

[10] Mark E. Koltko-Rivera, "The Psychology of Worldviews."

[11] Lakoff, George (1993). "The Contemporary Theory of Metaphor." In A. Ortony (Ed.), Metaphor and Thought (2nd ed.). Cambridge University Press.

[12] George Lakoff and Mark Johnson, *Metaphors We Live By.*

Living As If: Choosing a Worldview

We cannot prove that Tahlequah was genuinely grieving. We have no direct access to her subjective experience. We cannot prove that consciousness is fundamental rather than emergent, that cetaceans are our cognitive or experiential equals, or that mind is woven into the fabric of reality rather than being a late-arriving accident of evolution. We cannot prove any of these things with the kind of certainty we might wish for.

And yet, for seventeen days, millions of people responded to Tahlequah as if her grief were real, as if her consciousness mattered as much as ours, as if the connection we felt across species boundaries revealed something true about the nature of reality. We lived, briefly, within a different framework—one that recognized consciousness in another form, that acknowledged kinship beyond our species, that treated experience as real and significant regardless of whether it could be mathematically measured or scientifically proven.

What if we lived that way all the time? What if, when we looked at an orca or a dolphin, we saw not just a remarkable marine mammal but a being with a fundamentally different but potentially no less rich sense of experience? Would it change how we relate to the natural world—and perhaps to each other?

This book is built on a simple but consequential claim: in the absence of metaphysical certainty about the nature of consciousness and reality, we must choose a framework to live within. The question is not only "Is it true?" but "What happens if we live as if it were true?" All worldviews, including the one that dominates contemporary thought, are maps of reality—not reality itself. They are useful fictions, ways of organizing experience and guiding action. The question is not which map is absolutely true, but which framework serves us better.

This is not relativism; not all frameworks are equally good. Some lead to flourishing, connection, and sustainable ways of being. Others lead to destruction, alienation, and existential crisis. We can evaluate worldviews by their consequences—psychological, ethical, existential, practical. We can ask: What kind of world does this framework create? What possibilities does it make visible or invisible? What does it mean for how we treat other beings, ourselves, and the living systems that sustain us?

The mechanistic worldview has given us unprecedented power over the physical world—medicine, technology, the ability to predict and manipulate natural processes with remarkable precision. These are genuine achievements that any credible alternative must acknowledge and preserve. But this same worldview has also contributed to a crisis of meaning, a pervasive sense of alienation from nature and from each other, and a trajectory that appears to be leading toward ecological catastrophe.

It is also a worldview that makes some crucial things invisible. What if consciousness is not an anomaly to be explained away but a fundamental dimension of reality that our current map systematically excludes? What if we share this planet with beings who are in a meaningful sense our cognitive peers, but our framework prevents us from recognizing them for what they are?

This book invites you to experiment with living as if consciousness were fundamental rather than derivative—not as an article of faith, but as a working hypothesis whose consequences we can observe and evaluate.

What Lies Ahead

This exploration unfolds in four parts, each examining our central questions from different angles. The structure is intentionally holographic—key themes will spiral and return, each time revealing new facets and connections.

Part I examines how we got here—how the participatory cosmos of our ancestors gave way to the mechanical universe of modern science, and why this transformation, however productive, may have been incomplete. We'll trace the historical arc from a world alive with meaning and purpose to one that treats consciousness as an uncomfortable anomaly, and we'll see why the modern scientific worldview, despite its genuine achievements, struggles to accommodate the very minds that constructed it.

Part II presents evidence that doesn't fit comfortably within the inherited framework. We'll examine cetacean neuroscience and behavior in detail, exploring what their massive, ancient brains and sophisticated social lives might reveal about the nature of consciousness. We'll also look at quantum mechanics and mind-body

phenomena—domains where the purely physical description seems incomplete, where consciousness appears to play a role that mechanistic models cannot easily explain.

Part III develops the philosophical alternative. Drawing on thinkers from William James to Alfred North Whitehead to contemporary philosophers of consciousness, we'll construct a framework that treats consciousness as fundamental rather than derivative, that sees reality as both physical and experiential, that makes room for meaning and purpose without requiring supernatural intervention.

Part IV explores what it means to live within this framework. What are the ethical implications if cetaceans might be our equals? What changes existentially when consciousness becomes primary rather than secondary? How do we navigate life holding our metaphysical commitments lightly while still allowing them to guide us? This is about practice—about bringing philosophy down from abstraction into the texture of daily life.

Throughout, certain themes will spiral and return: the possibility of cosmic equivalence between humans and cetaceans, the contrast between experiential and abstractive modes of being, the meaning crisis afflicting modern culture, and the vision of a participatory cosmos in which we belong rather than merely exist. These themes will deepen and connect as we progress, each examination revealing new facets of the central question.

Notes on Certainty and Consequence

The ideas offered here may prove wrong. What's presented is a framework, not a revelation of ultimate truth. Consciousness as fundamental, cetaceans as our cosmic peers, the universe as participatory rather than mechanistic—these are elements of one possible map of a territory we all inhabit but none of us fully understand.

But the dominant scientific model is also a choice, not a proven truth. It too is a map, not the territory. It is one interpretive framework among others, and despite its genuine achievements and undeniable utility in certain domains, it may be incomplete in ways that matter profoundly—psychologically, ethically, existentially, and practically.

Critics sometimes demand: "Is your framework falsifiable? Is it scientific?" But this question itself reveals an assumption worth examining. The life sciences—biology, ecology, evolutionary theory—have succeeded magnificently not primarily through falsifiable predictions but through narrative coherence, pattern recognition, and explanatory power. Most of biology's major breakthroughs came through accident and experiment rather than theoretical prediction. Yet we rightly consider evolutionary biology rigorous science, judged by whether its narratives make sense of the evidence, generate productive research, and prove practically useful. The framework offered here asks to be evaluated by those same pragmatic criteria—not by a standard that biology itself doesn't consistently meet.

The alternative proposed here deserves serious consideration—not because it's certainly true, but because the consequences of living within it might be significantly better. Better for our relationship with the natural world. Better for the possibility of recognizing and preserving forms of consciousness that took millions of years to evolve. Better for addressing the crisis of meaning that haunts modern culture despite our material prosperity. Better for creating a future in which technological power is guided by wisdom rather than leading to self-destruction.

If we're destroying beings who could be our cognitive peers, then we are committing one of the great moral catastrophes of history—and doing so blindly, prevented from seeing what we're doing by the very framework we've inherited for making sense of the world. This is not an academic issue. It's urgent; it's highly consequential; and it demands a response.

The Invitation

Tahlequah still swims in the waters of Puget Sound. Her species faces existential threats, indeed the increasing likelihood of extinction, from the profound changes we have made to her world. For seventeen days in the summer of 2018, we lived as if her grief were real, as if her consciousness mattered as much as ours, as if the connection we felt across species boundaries revealed something true about the nature of existence. What

if we never stopped living that way? What if we allowed that recognition to reshape how we understand consciousness, how we relate to the natural world, how we interpret our place in the cosmos?

This book asks you to consider that possibility. Not as dogma to be believed, but as an experiment to be lived. Not as a rejection of science, but as an expansion of what we consider natural. Not as a return to pre-modern superstition, but as a move forward to a more complete understanding that integrates scientific rigor with the dimensions of meaning and consciousness that the modern scientific worldview has systematically excluded.

The choice is yours. The universe may be watching through our eyes to see what we decide.