



The Mystical Experience of Evolution: Alfred Russel Wallace, Ernst Haeckel, and Pierre Teilhard de Chardin

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Evolution is frequently regarded as evidence of an atheistic–mechanistic worldview. Still, it implies that life, and thus also consciousness and knowledge, is a developmental phenomenon and inherently unfinished. Here, we define this condition as the mystical dimension of evolution and apply it to examine how three early evolutionary thinkers came to advocate a metaphysical view of evolution. Alfred Russel Wallace outlined an evolutionary cosmology centered on the emergence of human self-awareness. Ernst Haeckel advanced a monistic view of evolution in which matter and spirit are two sides of the same coin, and Pierre Teilhard de Chardin regarded consciousness as the unifying trajectory of an evolutionary process that encompasses the entire universe. The article then compares the mystical–evolutionary perspectives to contemporary evolutionary thought. Particular attention is given to the question of reality’s inner aspect, the origin of consciousness, and the discussions surrounding the anthropic principle. We then address possible implications of evolutionary mysticism for deep ecology and environmentalism.



Introduction

Evolutionary thought took form during two developmental phases. The first gained prominence in the wake of the Enlightenment and German idealism, where naturalists began to conceive the history of life as manifestations of an inherent growth process. Erasmus Darwin (1794, 505) described biological novelties as caused by “the faculty of continuing to improve by its own inherent activity,” Jean-Baptiste Lamarck conceived of them as the result of an inner strive for perfection, and Alexander von Humboldt (1845, 52; our translation) described nature as an organic whole—a “Naturgemälde (painting of nature) . . . set in motion and enlivened by internal forces.” Naturalists from Peter Simon Pallas (1766) to Heinrich Bronn (1858) envisioned the history of life as an ever-branching tree of life across deep time (Hestmark 2000), according to Arthur Schopenhauer, empowered by some form of universal will. The botanist Franz Unger also described evolution as driven by intrinsic growth processes in which novel taxa emerged from forerunners, like a tree whose branches never stop dividing and growing. The “origin for all these manifold distinctions . . . can by no means be an external one but must of necessity lie within” (Unger 1852, 344; our translation).

The second phase began with Charles Darwin’s (1859) *On the Origin of Species*. The book greatly substantiated evolutionary thought with a wide range of empirical data. Still, Darwin’s most crucial contribution was, in tandem with Alfred Russel Wallace, to launch a mechanistic explanation that made it possible to imagine how one species transformed into a novel one. Darwin was less concerned with ideas of inherent growth, emphasizing instead causal relationships associated with descent in terms of struggle for life, adaptation, and natural selection. The concept of the tree of life, in fact, is only touched upon hastily in his book and explicitly assigned as a simile, without any inherent reality: “The affinities of all the beings of the same class have sometimes been represented by a great tree. I believe this simile largely speaks the truth” (Darwin [1859] 1909, 129–30). The advent of Darwinism accordingly heralded a concept of life where organisms were increasingly perceived as externalized secondary effects and ruled by heritable traits and environmental factors (Huneman 2014; Lindholm 2015).

Darwinism soon sparked debate. Pre-Darwinian thinkers had envisioned the tree of life as empowered from within—leaving space for metaphysical speculation. In contrast, evolution by natural selection seamlessly described how one species transformed into another, without remnants of any gods in the gaps. The aftermath of the publication of *The Origin of Species* was accordingly dominated by harsh confrontations between theists and atheists, and the controversies remain current in some circles (Scott 2004; Goodman 2010).

One might question, however, whether evolutionary thought itself contains a possible solution to the polarized discourse. Given that living beings are

evolving, human insights are provisional and evolving as well. Knowledge grows, just as life does, both historically and biographically. This fact facilitates an epistemology that does not regard scientific truth as final and finite but as evolving, as the horizon is constantly expanding (Archetti 2012; Whitehead 1932). Thinking and understanding are unfinished enterprises that proceed throughout life (Arendt 1971). Educational theories have frequently considered knowledge and concepts as growing units alongside child development (Lindholm 2018; Steiner [1924] 1995; Vygotsky 1962). In *Die Weltalter*, Friedrich Schelling ([1811] 1985) asserts that concepts develop and thus always tend to be incomplete, as “principles and concepts cannot be defined once and for all in any fixed way—for being caught up in continual motion, advancement, and intensification, any concept of it can hold true only for a fleeting moment” (quoted from Teichmann 1989, 23; our translation).

The dialectic habit of science may itself be understood as an expression of the rhythm or pulse of evolving knowledge (Sparby 2014), which lets us suggest that lasting insights as well as the temporariness of specific knowledge may coexist and coevolve. This is something most scientists are familiar with. Novelties may begin as fragile hunches but become substantiated in due time, branch out, and motivate new ideas, hypotheses, and research projects. Knowledge evolves. This does not mean that everything is relative. Old truths are rarely wrong. The theory of relativity did not ruin Newtonian physics. But there was more to the story. The theory of evolution is no less valid today than when it was conceived. Still, important features are complemented or appear in another light now than during the Victorian era. Too rigid positions, be they atheistic or theistic, may hinder the evolvability of knowledge, as both set limits to what we can know. Still, evolutionary epistemology may arouse metaphysical undertones, as research tends to penetrate ever deeper into its subject (Dreyfus and Kelly 2011).

Research is always conducted with the expectation that there is something more to discover. This implies that knowledge contains a tacit element (sensu Polanyi 1966). The capability of knowledge to grow and evolve (i.e., the growth of biological thought, sensu Mayr 1982) may legitimize the term “evolutionary mysticism.” Evolutionary mysticism in our context is hence not an esoteric or incomprehensible issue but rather the fact that knowledge has an inherent tendency to develop, transform, and expand (Lowney 2023). The term points to the experiential depth of insight that emerges when knowledge transcends purely analytical modes of thinking. In this article, we use the term “mysticism” to denote the evolving, transformative character of knowledge when it engages not only with facts but also with the meaning and interiority of reality.

This conception of mysticism aligns with Georg Friedrich Hegel’s (1991) distinction between understanding (*Verstand*) and reason (*Vernunft*). Understanding analyzes by breaking reality into discrete, classifiable parts.

Reason, by contrast, intuits the wholeness that underlies those parts—a unity that understanding finds mysterious, not because it is irrational but because it exceeds analytical thought. For Hegel (1991, 133), what appears mystical to the intellect is for reason graspable as a speculative unity:

“The mystical” is certainly something mysterious, but only for the understanding, and then only because abstract identity is the principle of the understanding. But when it is regarded as synonymous with the speculative, the mystical is the concrete unity of just those determinations that count as true for the understanding only in their separation and opposition . . . [T]he rational as such is rational precisely because it contains both of the opposites as ideal moments within itself. Thus, everything rational can equally be called “mystical”; but this only amounts to saying that it transcends the understanding. It does not at all imply that what is so spoken of must be considered inaccessible to thinking and incomprehensible.

Mysticism, then, is not irrationality but points to a state of knowledge that grows organically from the limitations of mere understanding. Against this backdrop, one may ask whether contemporary evolutionary thought, with its emphasis on causal mechanisms and natural selection, has lost sight of reason, perceived as a holistic evolutionary tree of life. The latter, by contrast, may offer a metaphysical yet experientially grounded understanding of evolution.

This article investigates how the mystical undertones found among pre-Darwinian thinkers transformed and reemerged in the decades following the advent of Darwinism. We examine how the inside dimension, the emergence of consciousness, and the human riddle took form among three evolutionary scientists: the British naturalist Alfred Russel Wallace, the German biologist Ernst Haeckel, and the French biologist-theologian Pierre Teilhard de Chardin, and how these problems revitalized mystical elements in their evolutionary understanding.

We then discuss the possible legitimacy of such interpretations in light of contemporary evolutionary biology and cosmology, again structured around three central motifs: (1) the tree of life as expression of an inside, (2) the evolutionary character of consciousness, and (3) the peculiar evolutionary position of *Homo sapiens*. To our knowledge, such a comparative approach has not previously been undertaken. Finally, we explore the possible relevance of evolutionary mysticism for deep ecology and environmentalism (Lindholm 2022; Taylor 2009).

Evolutionary Mysticism by Alfred Russel Wallace

In England, mystical elements of evolutionary thought are particularly associated with Alfred Russel Wallace (1823–1913). Wallace was not only Darwin’s

co-discoverer of the theory of evolution by natural selection but also the first to discuss the origin of *Homo sapiens* in the light of the new theory (Wallace 1864, 1870). He entered the topic without metaphysical aspirations, but his findings profoundly altered his view (Lyons 2019). Wallace claims that *Homo sapiens* cannot be fully explained by natural selection alone. Humans possess an amount of cultural adaptability, behavioral flexibility, and moral awareness that allows them to act with foresight and alter their evolutionary trajectory to an incomparable degree. Intellectual capacity and social flexibility prevent selection from taking hold, as cultural and mental attributes enable sufficient autonomy and foresight to get ahead of the selection mechanism. This marked, in his view, a turning point in the history of life on Earth: “A being had arisen who was no longer necessarily subject to change with the changing universe—a being who was in some degree superior to nature, inasmuch as he knew how to control and regulate her action, and could keep himself in harmony with her, not by a change in body, but by an advance of mind” (Wallace 1870, 325).

With the rise of tool use, situated collaboration, and symbolic thought, the selective pressures on the human body decreased, while the evolution of the brain and mind accelerated. In contrast to other species, which continue to adapt through physical change, Wallace argues, the human being evolves through cognitive, ethical, and technological means. Natural selection no longer dictates bodily evolution; instead, humanity is now shaped by foresight, intention, and cultural invention.

By evading natural selection, *Homo sapiens* constitutes an evolutionary shift with profound consequences for the entire planet. A creature that is foresighted and masters the forces that would otherwise lead to adaptation will increasingly reshape its environment in accordance with its own preferences. Humans may hence alter the fate of other species, too: “This victory which he has gained for himself, gives him a directing influence over other existences. Man has not only escaped ‘natural selection’ himself, but he is actually able to take away some of that power from nature which before his appearance she universally exercised. We can anticipate the time when the Earth will produce only cultivated plants and domestic animals; when man’s selection shall have supplanted ‘natural selection’” (Wallace 1870, 326). Wallace thus identified core elements of what is referred to as the Anthropocene.

The peculiar case of *Homo sapiens* in the tree of life caused Wallace to revise previous beliefs. He began to take interest in parapsychology, forged contacts with theosophical circles, and became concerned with the immortality of the soul. The evolution that has produced the diversity of life will gradually burn out, he asserted, and in future center around the ethical growth of humanity. *Homo sapiens* is evolutionarily unfinished. Ethics do not make life easier but rather more challenging, Wallace asserts. Humans must solve dilemmas that cannot easily be mastered, but the struggle for truth, beauty, and goodness

makes the individual wiser and promotes cultural and personal growth. Human beings accordingly constitute the crossroad where biological evolution turns into cultural and ethical evolution by means of fulfilling their destiny through ethical and spiritual growth (Wallace 1870, 351). *Homo sapiens* constitutes a turning point where the evolutionary trajectory, which had thus far pointed outwards and created biological novelties, turns inward towards increased ethicizing.

This growing emphasis on the mental and moral capacities of humans led Wallace to reconsider the nature of consciousness itself. He came to see consciousness not as a mere byproduct of brain activity but as something intrinsic to the structure of reality itself. To make his case clear, he explores the relationship between consciousness, decision-making, and bodily action (Wallace 1870, 351). Indeed, the latter requires energy, measurable as calorie consumption. The governance of action, however, is posed by conscious agency, which accordingly cannot be solely a matter of calories. Action depends on an initiative and a decision, which emanate from an impulse. It is the subject who stands up and decides where, how, and for how long the activity and energy consumption should last. This initiative and the concurrent control do not stem from muscles. The subject takes hold and maintains them until the task is accomplished. The regulatory determinant of energy consumption is therefore first-person agency and consciousness.

Wallace's colleagues, including Darwin and Thomas Huxley, still insisted that consciousness could be deduced from the cellular protoplasm of the brain. Wallace rejected that position, as it would mean that neural tissue, if only sufficiently complicated, suddenly brought to life an inexplicable subject. This sudden emergence of an inside with a first-person perspective would pose a "black box," as there is no principal difference between simple and complex nerve tissue. To conceive consciousness as merely a neurophysiological epiphenomenon, according to Wallace, leads to unsolvable logical problems. The only remaining answer is to conceive consciousness as a fundamental property not only of living things, but of matter per se (Wallace 1870, 359; 1889, 476). The experiential inside perspective is accordingly an inherent part of reality.

Admittedly, Wallace was not always consistent in his claims, but nonetheless repeatedly considered consciousness an inherent feature of reality, not a separate existence. In his autobiography, he complains that he once published a book entitled *The Scientific Aspect of the Supernatural*, as the last term is "somewhat misleading... For all the phenomena, however extraordinary, being really 'natural' and involving no alteration whatever in the ordinary laws of nature" (Wallace 1905, 280). Numerous scientific facts, from astronomy and microbiology to magnetism and electricity, would once have been considered supernatural, he writes. Reality is matter and spirit in one and the same. In this way, Wallace's

scientific reflections evolved into a holistic worldview, which also made him an early environmentalist pioneer (Knapp 2008; Lomolino 2019).

Wallace's (1889, 477) ideas gradually expanded into an evolutionary cosmology, where "the whole purpose, the only *raison d'être* of the world—with all its complexities of physical structure, with its grand geological progress, the slow evolution of the vegetable and animal kingdoms, and the ultimate appearance of man—was the development of the human spirit in association with the human body."

In the book *Man's Place in the Universe* (1904), he gathers further evidence to substantiate his view, citing features of the galaxy, the solar system, Earth's rotation, climate, atmospheric chemistry, and orbital stability as prerequisites for intelligent life. He returns to the theme in *The World of Life* (1911), where he once again concludes that the history of life constitutes a trajectory culminating in humanity. Wallace (1911) sees evolution first branching out into increasing diversity through "the production of the lower animals" before seeming to "converge in definite directions," culminating in the ethicizing animal *Homo sapiens*. This prospect comes close to what Pierre Teilhard de Chardin would advocate two generations later.

Thus, to Wallace (1911, 391), the potentiality coming to expression in the human being became the fulcrum that in its core was the driving cause for the universe, the Earth, and the biosphere: "[T]hese deeper and deeper mysteries which confront us everywhere as we advance farther in our knowledge of this universe, are now serving, and will serve in the future so long as man exists upon the Earth, to give him more and more adequate conceptions of the power, and perhaps to some extent of the nature, of the author of that universe; will furnish him with the materials for a religion founded on knowledge."

Wallace (1869, 596) envisions a future state of individual freedom and moral self-governance as the goal of cosmic evolution—achieved through the development of humanity's intellectual, ethical, and physical capacities: "[S]o perfectly fitted for a social existence, by knowing what is right, and at the same time feeling an irresistible impulse to do what we know to be right." Evolution, accordingly, was to Wallace not only a biological process but also a mystical experience—one that bridged empirical science with inner experience, not confined by the divide between nature and culture. As will be shown, Wallace was not alone in this way of thinking.

Evolution as Spirit and Matter: Ernst Haeckel

In German culture, spirit and matter as two sides of the same coin was advocated not only among naturalists but also among thinkers like Friedrich Schelling and Johann Wolfgang Goethe. This laid the foundation for Ernst Haeckel's monistic view of evolution. In line with his phenomenological disposition—a

legacy from Goethe¹—Haeckel (1866 Vol. II, 447; our translation) considers science and philosophy as two sides of the same coin: “All true natural science is philosophy, and all true philosophy is natural science.” He labels his worldview monism, to mark the conquest of the mind–matter dichotomy and described the universe as a unified substance that expresses itself both materially and spiritually. All matter, he claims, is spiritually animated, and every spiritual action corresponds to a physical form, and this became manifest in the imagination of evolution as a growing tree.

Haeckel’s contribution to the general acceptance of the theory of evolution is probably even more significant than that of Charles Darwin. Strikingly, however, Haeckel does not stress adaptive details and speciation. In fact, natural selection “played only a secondary role in Haeckel’s evolutionary philosophy” (Bowler 1989, 201). Instead, the tree of life, as a unifying imagination of the inside–outside, became a recurring motif in his evolutionary concept (Pietsch 2013). From this, Haeckel outlines an evolutionary cosmology where everything is derived as a continuation of the preceding—not along mechanistic principles and the causal nexus but organically, as trees grow and unfold in space-time. This led Haeckel to a narrative of evolutionary growth, without sharp boundaries between matter, life, and soul. “In Haeckel’s view, evolution is a universal phenomenon affecting everything from inorganic matter to man” (Levit and Hossfeld 2017, 176). In his book *Kristallseelen* (*Crystal Souls*), Haeckel (1917) even tries to integrate a spiritual aspect into the mineral kingdom. He delves into issues of biocrystallization and suggested that minerals have a kind of inside too, like living matter, as “everything that has materiality is also alive, whether it is organic or inorganic. Everything is animated, both crystals and organisms” (Haeckel 1917, 10; our translation).

Haeckel—more consistently than Wallace—views consciousness as an inherent property of matter, not a supernatural entity separate from the natural world. For Haeckel, evolution follows a progressive trajectory—an unfolding from simple to more complex forms, with the human being at its apex. Though he rejects teleology, the logic of his system implies inevitable movement toward “more perfect” structures (Levit and Hossfeld 2022, 15). Mystical undertones are also present in what Haeckel (1866, 300; our translation) considered his most famous discovery—that organisms embryonically repeat the evolutionary history of their ancestors by what he called organic creation: “The organic individual repeats during the rapid and brief course of its individual development the most important of those form transformations which its ancestors underwent during the slow and lengthy course of their paleontological development.”

To Haeckel, *Homo sapiens* is not as enigmatic as it is to Wallace. Nonetheless, he acknowledges that humans fundamentally differ in their relationships with the environment and thus pose an anomaly. Similar to Wallace, he identifies elements of what a century later would take form as the Anthropocene concept. With

humans, the history of the Earth enters “the era of man, the anthropolithic or anthropozoic period . . . Man has acted with a greater transforming, destructive, and modifying influence upon the animal and vegetable population of the Earth than any other organism. For this reason . . . we may with full justice designate the development of man and his civilization as the beginning of a special and last main division of the organic history of the Earth” (Haeckel 1868, 300–1; translated by Kutschera and Farmer 2020).

It may seem disputable whether Haeckel’s view of evolution qualifies as mystical. He himself would have rejected mysticism, as the monism he advocated became increasingly atheistically fashioned. Still, his approach comprises pseudo-religious undertones, in contemplating the tree of life as a manifestation of the living wholeness of evolution. Altogether, Haeckel drew more than two hundred trees, often presented as magnificent oaks with powerful stems, branches, and twigs, to visualize the history of certain taxa, or the entire world of life. He perceived the evolutionary tree the way clergy perceive their altarpiece—as a philosophical–scientific artwork that unveils the descent of life as an artistic drama throughout the history of the Earth.

From E-volution to In-volution: Pierre Teilhard de Chardin

In France, mystical responses to evolution were rare, but one prominent case is Pierre Teilhard de Chardin (1881–1955), who was both an ordained priest and a paleontologist (with a PhD on the evolution of mammals). He was inspired by Henri Bergson and went on to develop a Christian–evolutionary cosmology, as elaborated in his book *Le Phénomène Humain* (Teilhard de Chardin 1959). Teilhard considered God as part of the evolutionary theatre, through a form of theogenesis (Delio 2020). This section shows that Teilhard, similar to Haeckel, was primarily inspired by the imagination of the tree of life and less bothered by causal mechanisms of speciation.

Teilhard argues that reality cannot be fully grasped from an external, outside perspective alone. He sees this latter approach as an unintended consequence of striving for scientific objectivity. To counter it, he calls for a “within” perspective—a participatory, first-person form of cognition. Teilhard describes this within as a psychic depth—a quality present wherever consciousness emerges. He clarifies that it is not a physical depth (like geological layers) but the inner side of matter itself, a personalized face of the cosmos: “The *within* is used here . . . to denote the ‘psychic’ face of that portion of the stuff of the cosmos enclosed from the beginning of time within the narrow scope of the early Earth” (Teilhard 1959, 72).

Teilhard hence arrives at a view that has much in common with Wallace and Haeckel: consciousness is an inherent property of reality, manifesting itself as intentional, formative competences of matter. Teilhard does not consider the origin of life as a crucial problem but instead views life and the Earth’s

crust as intimately interwoven from the very beginning. Crystallized minerals have in common with life the competence to maintain form. Still, minerals cannot grow into organized, evolving wholes. In Teilhard's (1959, 69) words, the mineral kingdom embarked early on a path "which closed them prematurely in upon themselves." But the formation and crystallization of the Earth's crust also resulted in the release of energy, which in turn made life possible. From an inner perspective, the lithosphere sacrificed itself for the emergence of life. From an outer view, this aligns with geo-ecological processes like the weathering and erosion of the Earth's crust, which mobilize mineral nutrients by means of clay, silt, and sand and enable soil formation and plant growth. In this way, Teilhard's view closely aligns with the breakdown of the lithosphere into soil, which provides the physical foundation for the plant kingdom. In Teilhard's terms, the inner and the outer represent two sides of the same phenomenon: the dissolution of one principle makes possible the emergence of the next.

A core message throughout Teilhard's book is that development is not just about growth or novelty but follows a full arc—from emergence to maturation, followed by decline and dissolution. Goethe (1991) had considered this developmental cycle to be particularly distinct in herbaceous plants. Growth is initially rapid when a shoot and a stem with large leaves take form. But then growth ceases. New leaves are successively smaller and finally replaced by a novel principle, the flower, which in turn is short-lived but lays the foundation for seeds in the future.

Development is hence not only growth, extension, and e-volution but contraction and in-volution too, where something folds back and into itself, while simultaneously condensing into a new level. Teilhard (1959, 271) sees the history of life as pulses of unfolding e-volution, which transform into in-folding in-volution.

Self-awareness marks a crucial case of such in-volution, when consciousness folds back on itself. It is no longer just perception but the ability to reflect: to know that one knows. This creates a centered unity in the individual. This self-reflective in-folding gives rise to a new inner world. With it comes abstract thought, imagination, mathematics, art, and shared emotion. These are not merely by-products but the consciousness imploding into itself.

In-volution of consciousness, however, also encompasses a novel capacity for shared meaning. Consciousness understands; self-consciousness also recognizes that others understand. Humans grasp the meaning of the term "we," which denotes a common space for shared meaning and collective intentions. No individual on their own can construct skyscrapers, steer tankers, wage war, manage wealth, trade stocks, extract metals from the Earth's crust, or export goods across the globe. All such endeavors rest on the capacity to share meaning. The brain and self-consciousness function as shared mental organs, unifying humanity through common understanding (Dunbar 1998; Henrich

2016). Rudolf Steiner (1988, 125) points to this capacity in claiming that “[b]ecoming aware of the idea within reality is the true communion of humanity.”

Teilhard describes this sharing capacity as the emergence of a new mental envelope on Earth: the noosphere. Alongside the lithosphere, hydrosphere, atmosphere, and biosphere, the noosphere is a thinking layer that spreads across the planet with the rise of self-consciousness. With the advent of *Homo sapiens*, the Earth, he writes, “gets a new skin—or better, finds its soul” (Teilhard 1959, 183).

The noosphere marks the beginning of a novel ripening of a seed resulting from consciousness imploding into itself. It constitutes a turning point, where consciousness, which hitherto was animate and sensuous and directed outward, folds inward and becomes aware of itself.

With humanity, evolution itself begins to reflect. We are, according to Teilhard (1959, 224), “not the centre of the universe . . . but the arrow pointing toward its unification.” This echoes Wallace’s view as well as that of German Romantic thinkers like Schelling, who saw nature becoming conscious through the human mind. Teilhard (1959, 120) expresses it simply: “The consciousness of each of us is evolution looking at itself.”

The in-folding that occurred in the biosphere “when for the first time a living creature perceived itself in its own mirror” (Teilhard 1959, 181) marked the advent of a new evolutionary principle. Until then, evolution had been about proliferation of ever-novel forms. But from then on, diversification may transform into “in-volution,” characterized by gradual convergence and homogenization. This possibility, speculatively suggested by Teilhard, may sound unfamiliar to many, as speciation is commonly perceived as a branching process. However, in the meantime, it is recognized that novel species also may form through the hybridization of existing species (Abbott et al. 2013). It has also been speculated that such fusions may be on the rise due to human influence, associated with the homogenization of ecosystems (Vallejo-Martín and Hiscock 2016).

Teilhard (1959, 272) labels the ultimate goal of this growing convergence the Omega Point—an invisible magnetic pole that increasingly pulls evolutionary trajectories into similar directions, toward “that point at which, under the synthesizing action of personalizing union, the noosphere (furling its elements upon themselves as it too furls upon itself) will reach collectively its point of convergence.” Teilhard frames this evolutionary culmination in Christian terms. Christ becomes the face of the Omega Point—the ultimate convergence of consciousness. Just as biological evolution gave rise to self-awareness, Teilhard envisions a spiritual evolution culminating in Christ as the final center of unity. This vision comes close to Wallace’s view (“so perfectly fitted for a social existence”) as well as echoes other philosophical traditions that see love as the highest aim of human development. In Teilhard’s framework, evolution not only

manifests diversification and increased complexity but leads to communion, culminating in Christ as the final in-volution of the universe.

Discussion

Largely independently of each other, Wallace, Haeckel, and Teilhard developed evolutionary cosmologies with metaphysical elements that exhibit substantive thematic affinities:

1. They call for a complementary inside perspective.
2. They integrate consciousness into a broader evolutionary context.
3. They consider the human being a focal point in the evolution of the universe and the biosphere.

In the following, we elaborate how these lines of thought relate to contemporary understandings of cosmology and evolution before discussing the possible relevance of the elaborated perspectives for deep ecology and environmentalism.

The Inside Perspective

Strictly speaking, natural selection explains all organic features as caused by genetic recombination. Evolution in its Darwinian framing thus conveys an externalized view of life (Griffiths 2002). Darwin “created a perfectly externalist theory, a theory that seeks to explain organisms and their adaptations exclusively in terms of challenges and influences from their external environments” (Rosslénbroich 2023, 199). Teilhard (Teilhard 1959, 225) similarly critiques contemporary biology for rendering the organism passive—unable to influence its own development.

The loss of the inside perspective in the wake of Darwinism may be an unforeseen backfire of the disappearance of the tree of life from evolutionary thinking. Darwin’s use of the term “simile,” as quoted earlier, indeed encapsulates the core of the problem. By employing that word, he makes clear that the tree is merely a symbol, rooted in an external resemblance between two phenomena, without true kinship. A closer reading of Haeckel or Teilhard reveals that they do not perceive the tree of life as a simile for evolutionary history. Rather, they outline a genuine affinity: that the tree expresses something of the same formative force (*Gestaltungskraft*) they perceive within evolution itself. Darwin’s “simile” heralds a natural philosophy grounded in externalization, whereas the symbolic realism of the tree of life entails an implicit recognition that evolution possesses an interior—something that resists complete articulation in instrumental terms, a metaphorical resonance between two patterns whose likeness cannot be fully accounted for in words. This is why it is fitting to call Haeckel an evolutionary mystic, in contrast to Darwin, who, through his invocation of the simile, signals a worldview where nothing remains once concepts have been defined and

explained. For Darwin, concepts contain nothing beyond that which serves to explain them. Here, one recognizes from a different angle the distinction between understanding (*Verstand*) and reason (*Vernunft*) as articulated by Hegel.

The gene-centered and mechanistic view of evolution, however, that dominated biological thought during the twentieth century has gradually been extended and complemented (Baedke 2021; Devitt 2008). Organisms are not passive but active agents and co-constructors of their environment, through what is now defined as niche construction (Odling-Smee et al. 2003). Species reorganize their ecological niche and are hence to a certain degree in fact adapted to themselves (Pigliucci and Müller 2010; Uller and Laland 2019). Moreover, they alter the premises of selection by means of shifting developmental trajectories (Gilbert and Epel 2009) or by learning (Lindholm 2015), by phenotypical plasticity (West-Eberhard 2003), and by developing local traditions for nongenetic behavior (Jablonka and Lamb 2014), with unpredictable evolutionary outcomes.

Philosophical objections also took form, as a one-sided externalized view of life may threaten both humanity and the biosphere by generating what Hannah Arendt ([1963] 2007) considers “Earth-alienation.” We no longer see the Earth as our home and as qualitatively significant but as an accidental particle in an endless ocean of cosmic dust. A civilization that perceives reality only as an externality may become increasingly alienated from the Earth and threaten its natural surroundings.

In the sense that all three thinkers, from various positions, became proponents for an inside dimension of the biosphere, they reconnect evolutionary thought to pre-Darwinian thinkers, who conceived evolution as a growth process with inherent integrity, not merely an external effect of mechanistic factors. Thereby, they also settle close to metaphysics, however, as when claiming that human ethical development poses an extended continuation of organic evolution. In this way, inside and outside are brought together on a higher level, as Goethe advocated as the basis of his early evolutionary thought. He rejected the notion that one can distinguish inside from outside, writing in the poem “Allerdings” that nature is neither core nor surface but both at once (“*Natur hat weder Kern noch Schale/ Alles ist sie mit einem Male*”). Implicit is the idea that no boundaries are set for human knowledge: knowledge evolves and is henceforth latently mystical.

Albert Schweitzer arrived at a similar stance. To him, the immediate inside experience of being alive and wanting to continue living became the fundamental experience: “Philosophy must start from the most immediate and comprehensive fact of consciousness, which says: ‘I am life which wills to live, in the midst of life which wills to live’” (Schweitzer 1929, 246). The human experience of being alive and willing to live thus becomes the foundation for an ethical mysticism of nature: “Rational thinking which is free from assumptions ends therefore in mysticism. To relate oneself in the spirit of reverence for life

to the multiform manifestations of the will-to-live which together constitute the world is ethical mysticism” (Schweitzer 1929, XIV).

Schweitzer does not regard ethics as an additional construct but as something that emerges directly from the human experience of living itself. This makes *Homo sapiens* an evolutionary turning point: “What is the goal of this evolution which has begun in me?” (Schweitzer 1929, 249). Schweitzer finds himself in the same position as Wallace did two generations earlier. As an evolutionist, Schweitzer ascertains that there can be no definitive answer to this question. Just as evolution itself remains unfinished, the fundamental problem of humanity must remain unfinished. Yet it is precisely this character that leads him to a mystical view of life: “The surmisings and the longings of all deep religiousness are contained in the ethic of reverence for life. This religiousness, however, does not build up for itself a completed worldview, but resigns itself to the necessity of leaving its cathedral unfinished” (Schweitzer 1929, 250).

The Evolution of Consciousness

The claim that consciousness is an intrinsic property of the Earth, and possibly even of the universe, is commonly referred to as panpsychism (Goff 2023). Panpsychism is a prevalent worldview among Indigenous cultures (Abram 1997) but has also been advocated by philosophers from Baruch Spinoza to Alfred North Whitehead (Vetlesen 2019). This has also been related to the foundations of quantum mechanics and the geometry of space-time, suggesting a connection between the molecular processes of the brain and the underlying structure of the universe. Some theorists, like Stuart Hameroff and Roger Penrose (2014), tie neural quantum processes to consciousness, again claiming awareness as a fundamental aspect of the universe itself.

Indeed, *Homo sapiens* does not constitute the only species equipped with consciousness. Various forms of agency, awareness and proactive behavior have been documented across the animal kingdom (Bielecki et al. 2023; Lindholm 2015; Margulis 2001) and are even sometimes suggested to be a panbiotic capacity (Baluška and Levin 2016). Whether landscapes, rocks, and minerals also possess consciousness is challenging to clarify. However, the belief that mountains are dwellings of gods is widespread, and such ideas may also be found, for instance, among deep ecologists (Abram 1997; Foltz 1995).

The idea that evolution moves not only outward through diversification (e-volution) but also inward through integration and internalization (in-volution) was already present in early developmental thinking. Goethe, as mentioned, used the herbaceous plant’s life cycle as an archetype for alternating pulses of e-volution and in-volution (Portmann 1987). Contemporary evolutionary biologists sometimes arrive at similar conceptions. John Maynard Smith and Eörs Szathmáry (1995) identify a sequence of what they term “major evolutionary transitions,” where forms of increased complexity arise through

inverted cooperation and internalized consolidation. Prokaryotes became eukaryotes by means of symbiosis; eukaryotes formed multicellular organisms with specialized tissues, and multicellular organisms fused to superorganisms, as in ants and bees. A recent transition, they argue, occurred with the emergence of self-aware humans as outward-facing cognition folded inward, giving rise to language, empathy, and collaboration (Murphy, Ellis, and O'Connor 2009; Wilson 2015). Like Wallace, Szathmáry (2015, 10110) argues that self-awareness preempts natural selection and inhibits further biological change, causing a “gradual de-Darwinization of human biology.”

Simona Ginsburg and Eva Jablonka (2019), moreover, bring the transition perspective closer to consciousness. With memory and learning capacity as key parameters, they identify five stages of consciousness across the history of life, following a pattern comparable to the major evolutionary transitions, again culminating in *Homo sapiens* as the most complex case.

Cosmology and the Emergence of the Human Being

Conceiving of evolution as the gradual emergence and individuation of consciousness invites reflection on the relationship between the universe and the human being—a question that occupied all three evolutionary thinkers. The issue reappeared throughout the twentieth century among physicists, in what they began to term “the anthropic principle” (Barrow and Tipler 1986; Carter 1983).

Biology and astrophysics usually consider life and consciousness accidental byproducts of cosmic evolution. Rather than reversing causation, the anthropic principle highlights an observational selection effect: only universes compatible with the existence of life and consciousness can be observed. Slight changes in the frame parameters of quantum mechanics, chemical composition, or stellar properties would make life impossible, as noted by Fred Hoyle and Robert Dicke. Highly specific preconditions associated with the Earth–solar distance and the position of the solar system within the galaxy are also crucial for life (Gonzalez, Brownlee, and Ward 2001; Lammer et al. 2009). The implications are potentially far-reaching: the universe appears fine-tuned for the development of life and consciousness.

The anthropic principle led John Archibald Wheeler to the concept of the “participatory universe,” which has features in common with the works of Wallace, Haeckel, and Teilhard. Digging down into reality, deep down beyond particles, quantum mechanics, and quantum fields, Wheeler ([1989] 2018, 311) at the bottom finds meaning: “[E]very item of the physical world has at bottom—at a very deep bottom, in most instances—an immaterial source and explanation; . . . all things physical are information-theoretic in origin and this is a participatory universe.” He seeks support in Parmenides of Elea, who proposed that what is is identical with the thought that recognizes it, leading

Wheeler to the puzzling assumption that “the observer is as essential to the creation of the universe as the universe is to the creation of the observer” (quoted from Gale 1981, 171).

The emerging philosophy of physics, as advocated by Thomas Hertog (and, indirectly, Stephen Hawking), rejects the narrative of a universe as a machine ruled by pre-created laws. Instead, a conception of a self-organizing universe is advocated, where physical laws are not determinative but serve reality (Hertog 2023a, 258). The idea, Hertog (2023a, XIV) writes, gradually emerged through a puzzling feeling “as if the geneses of life and the cosmos are entwined with each other, that the cosmos knew all along that one day it would be our home.” This comes close to physicists like Freeman Dyson (1981, 250), who forty years earlier claimed that “[t]he more I examine the universe and study the details of its architecture, the more evidence I find that the universe in some sense must have known that we were coming.” Hertog’s book, through collaboration with Hawking, meets the call from Arendt to overcome the externalized Earth-alienation, as when Hertog (2023b, 41) states: “The quantum outlook that Stephen and I developed reads the universe’s history from within.”

Taken together, these perspectives suggest a possible convergence between cosmology, biology, and consciousness studies. What began as separate domains of inquiry increasingly points toward a participatory view of reality—one in which life and mind are not evolutionary accidents but intrinsic features of the unfolding universe.

Implications for Deep Ecology and Environmentalism

Mechanistic explanations and natural selection almost inevitably invoke externalist perspectives. The “inside” of evolution, in contrast, such as metaphorical visions like the tree of life, becomes accessible through a holistic approach (Hedlund 2024). Elements of such internal dimensions of life have been advocated even among biologists (Fábregas-Tejeda et al. 2024; Sterelny 2004). Efforts to reconcile nature’s outside and inside have long been an issue among environmentalists. Already, Henry David Thoreau (1817–62) conceived nature as a form of prayer (Higgins 2017), as did Rachel Carson (1907–64). Aldo Leopold began his deep-ecological journey of thought after an experience he had as a forester and wolf hunter after World War I. An encounter with a dying wolf sparked his environmental ethics. After the shot, he approached the wolf “in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain” (Leopold 1949, 138). He had become aware of the inside of nature, and the event became the beginning of a lifelong commitment to environmental activism and eco-philosophy.

Eric Katz (1997) encourages us to conceive of nature as a subject with inherent integrity. Like humans, nature is both entitled to respect and subject to

traditional ethical categories. James Gibson (2009, 11), moreover, claims that we are approaching a scientific–cultural transformation, leading the externalized outside into a reenchanting experience of nature and reality, which constitutes a “reinvestment of nature with spirit. Flatly rejecting modernity’s reduction of animals, plants, places, and natural forces to either matter or utilitarian resource, the culture of enchantment attempts to make nature sacred once again.” Environmentalism accordingly reflects the emerging insight that some pioneers of evolution were approaching in their search for an inside of nature.

Wallace anticipated elements of the Anthropocene based on what he perceived as a fundamental evolutionary problem associated with the human being. The general reluctance among colleagues to acknowledge his perspective, however, contributed to the century-long delay of its general acceptance. Today, the Anthropocene is an undeniable reality, if only because the planetary consequences of human behavior can no longer be ignored.

By virtue of a willingness to share responsibility for the future of the planet, the environmental movement signals that it is fundamentally anthropocentric. By taking co-responsibility for the future of the Earth, humans implicitly herald that they regard themselves as co-stewards of creation, and the claim hence poses an indirect recognition of the anthropic principle. While all other species address their evolutionary existence within specific ecological niches, the human being is forced to relate to the entire planet. The Anthropocene unquestionably manifests the enigmatic relation between human beings and the planet they inhabit, hence confirming the potential actuality of the anthropic principle. This is the insight Arendt (1958, 2) captures when she writes that “the Earth is the very quintessence of the human condition.”

The dawn of the Anthropocene discloses a blind spot within mainstream biological thought—its failure to embrace the full complexity of the human riddle. Only recently have some researchers begun to confront the problem. Joseph Henrich (2016, 318) characterizes the human being as a fundamentally new existence of the biosphere, “a new kind of animal,” and Patrick Roberts and Brian A. Stewart (2018, 542) claim that the profound adaptive shift in the species–environment relationship necessitates “a new ecological definition of our species.” Such statements come close to Wallace’s (1864, clxviii) claims, who already in his first article on human evolution wrote: “Here, then, we see the true grandeur and dignity of man. On this view of his special attributes, we may admit that even those who claim for him a position as an order, a class, or a sub-kingdom by himself, have some reason on their side. He is, indeed, a being apart.”

In this way, Wallace’s scientific reflections evolved into a holistic worldview. Evolution became not just a biological process but a mystical insight—a bridge between empirical knowledge and inner experience, a vision of nature in which external reality and the human mind were no longer opposed but intertwined.

This insurmountable condition lends renewed legitimacy to the nature–mystical evolutionary philosophy that pre-Darwinian thinkers advocated at the dawn of evolutionary thought.

Conclusion

This article has explored the mystical dimensions of evolutionary thought as articulated by Alfred Russel Wallace, Ernst Haeckel, and Pierre Teilhard de Chardin. Despite differing contexts, all three emphasize an inner perspective, integrating consciousness into the evolutionary process, and situating humans as pivotal actors within the universe and the Earth. Wallace highlights *Homo sapiens* as a turning point, where cognitive, ethical, and cultural capacities guide evolution beyond natural selection. Haeckel's monism portrays evolution as an organic unfolding, uniting matter and spirit, while the tree of life symbolizes the biosphere's integrated wholeness of internal and external dimensions. Teilhard extends this vision, conceiving of evolution as alternating phases of outward diversification and inward reflection, culminating in the self-aware noosphere and the Omega Point.

Contemporary biology and cosmology echo these insights: niche construction, agency, and the evolutionary transitions toward complexity possibly reflect an emergent inside dimension, while panpsychist perspectives and participatory universe theories suggest consciousness may be intrinsic to reality. These views also inform environmental thought, framing humans as co-stewards of creation and underscoring the ethical and ecological responsibility inherent in the Anthropocene. Evolutionary mysticism thus bridges empirical knowledge and inner experience, offering a holistic understanding of life, consciousness, and the human role in shaping both Earth and cosmos.

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Note

- ¹ Haeckel had a drawing of Goethe contemplating over the skull of Friedrich Schiller on his *ex Libris*, with Goethe's quote above: "Was kann der Mensch in Leben mehr gewinnen / als dass sich Gott-Natur ihm offenbare" ("What more can man gain in life / than that God-nature reveals itself to him").

Competing Interests

The authors declare that they have no competing interests.

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