Published in *Whitehead and Teilhard: Form Organism to Omega* edited by Andrew Davis and Ilia Delio (Orbis Books, forthcoming).

Chapter Six

Process Theology and the Modern World:

Science, Religion, and Christology After Whitehead and Teilhard

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> "After almost two centuries of passionate struggle, neither science nor faith has managed to diminish the other; quite the contrary, it becomes clear that they cannot develop normally without each other, for the simple reason that they are both animated by the same life."
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> **-Pierre Teilhard de Chardin**[1]

> "Philosophy frees itself from the taint of ineffectiveness by its close relations with religion and with science, natural and sociological. It attains its chief importance by fusing the two, namely, religion and science, into one rational scheme of thought."
>
> **-Alfred North Whitehead**[2]

Introduction

Pierre Teilhard de Chardin and Alfred North Whitehead are perhaps the two foremost 20th century contributors to evolutionary cosmology and process theology. Whitehead's theological ideas developed as a consequence of his work in mathematical logic, physics, philosophy of science, and cosmology without concern for the offense they may cause to any religious orthodoxies. Still, his creative conception of the God-World relation has been heartily taken up and developed by many American Protestant theologians, and increasingly by thinkers inspired

[1] Teilhard de Chardin, *The Human Phenomenon* (Portland, OR: Sussex Academic Press, 2003), 203.
[2] Whitehead, *Process and Reality: An Essay in Cosmology* (New York: The Free Press, 1929), 15.

by other faiths. Teilhard, on the other hand, was a paleontologist and Jesuit priest whose evolutionary revision of the dogma of original sin won him censure from the Catholic Church. Not unlike the Sun-centric Giordano Bruno had enjoined Catholic scholastics to look again at the motions of the heavens, the Omega-centric Teilhard called his fellow priests to turn their Christology away from a truncated vision of the past toward an evolutionary convergence in the future. Lucky for Teilhard, the Inquisition had by then retired its tradition of burning heretics at the stake. Regardless, his heart was already engulfed in the inferno of evolution.

Teilhard composed his masterwork *The Human Phenomenon* while in China between 1938 and 1940, just as the Second World War was beginning to rage in Europe. He was no stranger to the horrors of war, having served as a stretcher-bearer in the French army during the Great War. His experience fighting for survival and tending to wounded comrades on the front lines of over 80 battles did not deflate but buoyed his faith in the future. In July 1918, he prayed:

> Was there ever, my God, a humanity more like, in the shedding of its blood, to a sacrificed victim—more ready, in its ferment, to receive creative transformation—more rich, in what it unleashes, in energy that can be sanctified—more close, in its agony, to the supreme communion?[3]

Earlier in the war, he had a mystical encounter with a painted face of Christ whose outlines dissolved to encompass the whole world. Teilhard could not say whether the divine face expressed "indescribable agony or a superabundance of triumphant joy," but he reports seeing the expression once more "in the glance of a dying soldier."[4]

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[3] Pierre Teilhard De Chardin, *Writings in Time of War* (New York: Harper and Row, 1968), 223.
[4] Pierre Teilhard De Chardin, *Hymn of the Universe* (New York: Harper and Row, 1969), 41.

Two decades later, as younger men again slaughtered one another on the battlefield, Teilhard was engaged in an inner battle of the spirit to share his vision of evolution and what it portends for humanity. Just as Germany was invading France in 1939, Teilhard wrote to friends of his efforts "as his part in the combat—war being sublimated into a work to form new eyes, to enable the world to see and to become more."[5] He insists in an author's note added in 1947 and in his prologue to *The Human Phenomenon* that the book is not an attempt to do metaphysics or theology, but phenomenological science. He attempts to offer an account of the past, not in itself, but as it appears to a contemporary human observer "so that the world may be true for us at this moment."[6] Like Whitehead—who sought "evidence for that conception of the universe which is the justification for the ideals characterizing the civilized phases of human society"[7]—Teilhard was in search of the cosmological conditions of human self-consciousness, a new sort of study he christened "hyperphysics."[8] It may be that part of Teilhard's insistence that his treatise be interpreted strictly as a work of natural science was a plea to his Jesuit censors. He is careful to note on page one that "beyond this first scientific reflection, essential and ample room remains for the more advanced reflection of the philosopher and the theologian."[9] Regardless, the Society of Jesus ultimately refused to allow him to publish the book because of its unmistakable theological content.[10]

This chapter offers a Whiteheadian philosophical reflection on Teilhard's attempt at a hyperphysics of the human. While I find aspects of Teilhard's phenomenological vision of the

[5] Teilhard, *The Human Phenomenon*, xxiv.
[6] Ibid., 6.
[7] Whitehead, *Modes of Thought* (New York: The Free Press, 1938), 105.
[8] Teilhard, *The Human Phenomenon*, 2.
[9] Ibid., 1.
[10] Ibid., xxii.

past and mystical vision of the future deeply compelling, I argue that some aspects of his poetic synthesis of evolutionary biology and Christianity require metaphysical supplementation in light of Whitehead's cosmological scheme. But properly adjusted and mutually accommodated, I believe a Whitehead and Teilhard inspired synthesis of science and religion has much to offer anyone seeking a relevant and effective Christology for our perilous times.

Convergence

Anyone whose faith is wed to dogmatic tradition will inevitably resist novelties in speculative theology. A recent critic of Teilhard's attempt to evolutionize Christianity, Catholic philosopher and mathematician Wolfgang Smith, has argued that Teilhard's scientific claims are as fictional as his theological innovations are heretical.[11] On Smith's reading, evolutionary theory (which he very narrowly identifies with neo-Darwinism) has been refuted by Intelligent Design, and nothing can or need be added to Saint Augustine's doctrine of original sin or the Angelic Doctor Thomas Aquinas' teachings on the relationship between reason and revelation.

While the Church fathers remain worthy of careful study, Intelligent Design theorists have simply lost the plot, providing a great example of how not to mix scientific theory and theology. It is apparent that human consciousness, and with it our knowledge of the universe, has continued to evolve over the millennia. It is also important to remember that St. Thomas himself was initially a controversial figure. His efforts to integrate newly translated Aristotelean texts on natural science with Catholic doctrine met resistance from many Church leaders of the time who sought to censure him. Indeed, Thomas Berry once remarked that the magnitude of the alterations proposed to Christian self-understanding by Teilhard rival those introduced by St.

[11] Wolfgang Smith, *Theistic Evolution: The Teilhardian Heresy* (Brooklyn, NY: Angelico Press, 2012).

Thomas.[12] In the Anthropocene, the Earth itself has been transformed entirely by the application of our science and technology. In such a situation, Christians cannot but find themselves in need of a "refashioned Christology…to solve the apparent conflict that henceforth exists between the traditional God of revelation and the 'new' God of evolution."[13]

As for the general theory of evolution (which preceded and continues to be refined after Darwin) and Teilhard's poetic phenomenological approach to science, Smith's and others' criticisms can be at least qualified, if not refuted, particularly if we allow Whitehead to come to Teilhard's philosophical aid. The difficulty with Teilhard's claim to have produced a scientific treatise was summed up 60 years ago by the paleontologist George Simpson in his mostly sympathetic review of *The Human Phenomenon*: "imprecision or contradiction in definition is one of the constant problems in the study of the Teilhard canon."[14] Whitehead is recorded by his Harvard students as having made similar remarks about Henri Bergson, a shared influence on both Teilhard and himself. Whitehead takes Bergson's side in the latter's famous dispute with Einstein about the difference between duration and clock-time, but complains that Bergson "phrases it so that you never can be quite sure what he means." And yet, he continues, "Bergson has a merit greater than clearness," namely, "philosophical originality—putting things [in a way] which he feels and sees; whether he can make them clear or not."[15] A similar case can be made for the value of Teilhard's vision, but can his theory of the Omega Point really be considered scientific?

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[12] Thomas Berry, interviewed by Jane Blewett, https://youtu.be/tKEBQe4c7n0, 4:00-4:20. See also Berry, "Teilhard in the Ecological Age" in *Teilhard in the 21st Century: The Emerging Spirit of Earth*, edited by Arthur Fabel and Donald St. John (Maryknoll: Orbis, 2003), 60.
[13] Teilhard, *Christianity and Evolution* (New York: Houghton Mifflin Harcourt, 2002), 212.
[14] Simpson, George Gaylord. *Scientific American* 202, no. 4 (April 1960), 204.
[15] Bogaard, Paul and Bell, Jason (eds.), *The Harvard Lectures of Alfred North Whitehead, 1924-1925: Philosophical Presuppositions of Science* (Edinburgh: Edinburgh University Press, 2017), 299.

Though Teilhard calls his attempt to "make others see" a purely scientific project, his phenomenology nonetheless reaches beyond mere appearances to the within of things. By attempting to place human consciousness "wholly and completely in the context of appearances,"[16] Teilhard is turning the mirror upon the act of knowing itself. In this way, he hopes to "break through and go beyond appearances"[17] to the very source of our seeing.

As Thomas King says,

> In placing man [in the framework of phenomenon and appearance] Teilhard does not mean the flat veneer of colors that strike the retinas. Rather he wants to show the meaning that haloes man when he is placed in the context of a vast cosmic movement.[18]

Teilhard sees more than the bare sensory impressions of David Hume. His vision of the cosmos is one where every body (whether atomic, molecular, cellular, plant or animal) has an "internal propensity to unite."[19] The meaning of our perceptions is in the movement of matter itself, as "the subject is unquestionably no longer the human monad, but the world."[20] Instead of cutting the mind off from reality, Teilhard nearly identifies mind and nature by showing that one can come to know the world only "by being co-extensive with it," or by "becoming to some degree one body with it."[21] Our minds partake in the things themselves, and the things in us. Our bodies are not limiting containers, isolating us from the universe: "every cosmic particle, be it the smallest electron, is strictly co-extensive with the totality of space and time." Bodies are rather living expressions of our interiority, as Teilhard puts it elsewhere,[22] converging almost verbatim

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[16] Teilhard, *The Human Phenomenon*, 3.
[17] Pierre Teilhard de Chardin, *Letters from a Traveler* (New York: Harper: 1962), 70.
[18] Thomas King, *Teilhard's Mysticism of Knowing* (Fayetteville, NC: Seabury Press, 1981), 46.
[19] Teilhard, *The Human Phenomenon*, 188.
[20] Teilhard, *Toward the Future* (New York: Harcourt, 1975), 50.
[21] Teilhard, *Christianity and Evolution*, 61, 100.
[22] Teilhard, *Toward the Future*, 169n4.

on Whitehead's view that "the human body is that region of the world which is the primary field of human expression."[23] The convergence with Whitehead goes further:

> . . .the living organ of experience is the living body as a whole. . . . The plausible interpretation of such experience is that it is one of the natural activities involved in the functioning of such a high-grade organism. The actualities of nature must be so interpreted as to be explanatory of this fact. . . .we cannot tell with what molecules the body ends and the external world begins. The truth is that the. . .body is continuous with the rest of the natural world. Human experience is an act of self-origination including the whole of nature, limited to the perspective of a focal region...[24]

Though Teilhard goes to great lengths to assure the reader of *The Human Phenomenon* that the theory he lays out therein is not a work of metaphysics, a case can be made that Teilhard is turning the positivist approach to science inside out. Instead of bare and meaningless sensory impressions (patches of color, measurable angles, etc.) being the only and the most primitive form of experience from which all our knowledge is derived, he recognizes within the human being a "Cosmic Sense" or feeling of deep connection between what is interior and personal, and what is exterior and supposedly impersonal. The human being is "the universe…become conscious of itself."[25] As Whitehead would refer to it, Teilhard is describing a kind of "non-sensuous perception"[26] of the whole history of the universe coiling itself up within him. This is not a "solitary introspection, where beings are only seen as closed in on themselves in their 'immanent' operations."[27] Rather, every granule is constituted "by that which is commonly called

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[23] Whitehead, *Modes of Thought*, 22.
[24] Whitehead, *Adventures of Ideas* (New York: The Free Press, 1933), 225.
[25] Teilhard, *Human Energy* (New York: Harcourt, 1969), 102.
[26] Whitehead, *Adventures of Ideas*, 180.
[27] Teilhard, *The Human Phenomenon*, 22.

the 'beyond it' rather than by its center."[28] In other words, the immanence of the feeling of the within is part of a perpetual movement, or transience, which takes the granule in question beyond itself "to become part of a growing common movement of life."[29] Teilhard is correcting a "fallacy of misplaced concreteness" (as Whitehead called it) in the thinking of modern philosophers from Descartes and Hume to Kant. Instead of seeing the world only as it appears through the highly conceptualized, abstraction-prone mind of the philosopher, he returns to "to the deepest recesses of the blackness within"[30] and discovers there that "it is through [the] most incommunicably personal in us that we make contact with the universal."[31]

It will already be clear to students of Whitehead's theory of prehensive unification and account of the object-subject-superject vector of experience[32] that his categoreal scheme can bring much conceptual clarity and coherence to Teilhard's mystical insights. As Whitehead summarizes his view, it amounts to an inversion of modern philosophy as typified by Kant's transcendental idealism: "For Kant, the world emerges from the subject; for the philosophy of organism, the subject emerges from the world—a 'superject' rather than a 'subject.'"[33] Whitehead also articulates a novel theory of perception inclusive of the causal efficacy of our visceral feelings, a source of contact with cosmic energies and memories of deep time that has long been neglected by philosophers.[34]

Contrast

[28] Pierre Teilhard de Chardin, *Let me Explain* (New York: Harper and Row, 1972), 185.
[29] King, *Teilhard's Mysticism of Knowing*, 26.
[30] King, *Teilhard's Mysticism of Knowing*, 92.
[31] Teilhard, *Christianity and Evolution*, 97-98.
[32] Whitehead, *Process and Reality*, 29, 45-47.
[33] Ibid., 88.
[34] Ibid., 120-121.

Teilhard the priest and paleontologist gave us a new gospel of evolution and an inspiring vision of the human future. Whitehead the mathematical physicist and philosopher, equally aware of humanity's newly discovered cosmogenetic context, provided no less in the way of vision. But his cosmology is tempered by a radically empirical speculative method and an elaborate and revisable categoreal scheme. He offers not an eschatological destination but a way of making sense of natural science, art, spirituality, and the rest of human experience in a divinely inhabited world-in-process. Though this section emphasizes a contrast in their perspectives, this should be taken in Whitehead's sense of contrast as a way beyond contradiction to prehensive unification, seeking some intensification of our own vision as a consequence of attempting to think with a priest-scientist and a mathematician-philosopher about the complex unity of anthropocosmogenesis.

Even if we define natural science in the expanded, unbifurcated, organic sense that Whitehead does—as the study of relational patterns evident in the nexus of entities disclosed to sense perception including the colors of dawn and the harmonies of birdsong as much as the masses of atoms and wavelengths of light—Teilhard's study of the human phenomenon oversteps a strictly scientific purview. He laments that for convenience's sake the science of his day "has provisionally taken the stance of ignoring the question of how to link the two energies of body and soul together in a coherent way":

> But caught here as we are, for better or worse, in the logic of a system where the inside of things has just as much or even more value as their outside, the difficulty confronts us. It is impossible to avoid the encounter: we must move ahead.[35]

[35] Teilhard, *The Human Phenomenon*, 29.

Whitehead was also eventually compelled to move ahead from his early philosophy of science into a speculative cosmology integrating human consciousness and nature as studied scientifically within a broader organic metaphysics. But he did so while maintaining the special function of the natural sciences as a study of those aspects of experience which remain at least hypothetically "closed to mind."[36] Despite affirming that "nature can be thought of as a closed system whose mutual relations do not require the expression of the fact that they are thought about," Whitehead explicitly denies that his philosophy of science commits him to any metaphysical division of mind from nature. He also affirms that there are other ways that minds relate to themselves and to nature that do not involve sense perception directly or indirectly. Finally, his definition of natural science as "excluding any reference to moral or aesthetic values" is not at all a denial of the importance of Goodness and Beauty in any final accounting of reality, or of the devotion to Truth motivating all scientific inquiry. It's just that he would consider such an accounting a matter to be taken up in philosophical cosmology and theology, rather than by a special scientific investigation:

> The values of nature are perhaps the key to the metaphysical synthesis of existence. But such a synthesis is exactly what I am not attempting [in this treatise on the concept of nature]. I am concerned exclusively with the generalisations of widest scope which can be effected respecting that which is known to us as the direct deliverance of sense-awareness.[37]

[36] Alfred North Whitehead, *The Concept of Nature* (Cambridge, UK: Cambridge University Press, 1920), 4.
[37] Ibid., 5.

That said, Teilhard's phenomenological method can be fruitfully compared to the participatory scientific method practiced by Goethe, speculatively elaborated in the *Naturphilosophie* of Schelling, and later clarified and expanded by Rudolf Steiner[38] (who edited Goethe's scientific papers). Whitehead's Philosophy of Organism is also resonant with Goethean science and *Naturphilosophie*, but still, he cautions against claiming scientific knowledge beyond what we are aware of in sense perception. This is a check on the metaphysical overreach of any scientific materialism claiming science could even in principle explain consciousness, but also on any Absolute idealism claiming a mental explanation of nature. Qualitative science is possible under Whitehead's definition, but as Goethe also cautioned, whether doing qualitative or quantitative science we must pay due attention to the subtle interplay between observation and speculation, lest our "imagination…[sweep us] away on its wings before [we know our] feet have left the ground."[39]

Does Teilhard really *see* the psychic curvature of the universe with his eyes? Or is he *seeing into* the deeper tissues of imaginal experience weaving us back, body and soul, to the birthplace of the All? To say Teilhard is doing speculative cosmology and mystical theology is not to diminish the importance of his achievement in the slightest, but it does allow us to maintain the practice of scientific hypothesis formation and experimentation as a distinct enterprise. Goethe could observe the life cycle of plants and the daily rhythm of the Sun, allowing him to empirically describe the dynamic polarities evident in the metamorphosis of leaf and light. Teilhard cannot step out of cosmic history to see the terminus of the curve he traces from its dispersion in matter

[38] See, e.g., Rudolf Steiner, *The Philosophy of Freedom* (East Sussex, UK: Steiner Press, 2011). See also Rudolf Steiner, *Nature's Open Secret: Introduction to Goethe's Scientific Writings* (Great Barrington, MA: Anthroposophic Press, 2000).
[39] Johann Wolfgang von Goethe, *Scientific Studies*, edited and trans. by Douglas Miller (New York: Suhrkamp, 1988), 14.

through the socialization of life into the personal unity kindling in his heart-mind. While intensely suggestive and alluring to our powers of feeling and willing, especially when connected to the revelation at the core of his Christian faith, Teilhard's leap to Omega seems, to my thinking at least, unjustified. Further, his certainty on this point undoubtedly contributed to blinding him to the ecological destructiveness of industrial technologies and the ethical horrors of eugenics.[40] Whitehead's more cautious definition of scientific knowledge does not diminish the import of religious vision but allows for a more differentiated philosophical integration of science and religion. As he puts it in *Process and Reality*:

> Religion is centered upon the harmony of rational thought with the sensitive reaction to the percepta from which experience originates. Science is concerned with the harmony of rational thought with the percepta themselves.[41]

Stripped of its scientific claims and religious apologetics and read instead as speculative cosmology, Teilhard's approach shares much with Whitehead's. Like Whitehead, Teilhard is searching for generic characteristics that apply to atomic elements and living cells as much as to human consciousness.[42] He seeks "to discover the universal underlying the exceptional."[43] Teilhard affirms that "all energy is essentially psychic."[44] Also like Whitehead, he recognizes two poles or faces of cosmic process, what he calls "tangential" and "radial" forms of energy. Akin to Whitehead's physical pole, tangential energy refers to the exchange of mechanical forces; and akin to Whitehead's mental pole, radial energy centers itself around the lure of the

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[40] For an ecological critique of Teilhard, see Thomas Berry, "Teilhard in the Ecological Age," in Arthur Fabel & Donald St John (Eds.), *Teilhard in the 21st Century* (Maryknoll: Orbis Books, 2003), 57-73. On the issue of eugenics, Teilhard's numerous comments can only read as shocking to contemporary eyes. And yet for a species aware of and possessing the technology to transform itself, the question is less about whether eugenics itself is a good or evil idea, but about how to *evolve on purpose* while avoiding the evils of racism and classism.
[41] Whitehead, *Process and Reality*, 16.
[42] Teilhard, *The Human Phenomenon*, 13.
[43] Ibid., 24.
[44] Ibid., 30.

future.[45] While Whitehead grants there is reason to suspect that nature "contains within itself a tendency to be in tune,"[46] and while he recognizes a gradual movement in the evolution of the universe and in the history of civilization from brute force to persuasive love as the primary mode of relationship,[47] his vision lacks any hint of the necessity with which Teilhard seems to affirm the Omega Point. Where Teilhard prophesizes "a definite limit and term to the elementary value and to the sum total of radial energies,"[48] Whitehead remains skeptical of any final state of order "beyond which there can be no progress." "This belief in a final order," he continues, "popular in religious and philosophic thought, seems to be due to the prevalent fallacy that all types of seriality necessarily involve terminal instances."[49]

Excursus on Evolution

Bracketing the idea of evolution's end in a Christogenetic Curve of curves, Whitehead and Teilhard share a sense of the time-developmental genesis of the Earth and broader cosmos as essential to scientific understanding. Evolution must be integrated not just in biology but "as the guiding methodology of all branches of science," according to Whitehead.[50] For Teilhard, evolution becomes "a general condition to which all theories, all hypotheses, all systems must henceforth bow and satisfy if they are to be thinkable and true."[51] But neither was particularly attached to Darwin's theory of Natural Selection as the prime explanation of evolutionary process. Whitehead does not at all doubt the general Darwinian observation that a struggle for existence means the fittest eliminate the less fit.[52] But as he points out, this obvious fact offers no

[45] Teilhard, *The Human Phenomenon*, 30.
[46] Whitehead, *Adventures of Ideas*, 251.
[47] Ibid., 69ff. See also Andrew M. Davis (ed.), *From Force to Persuasion: Process-Relational Perspectives on Power and the God of Love* (Eugene. OR: Cascade, 2024).
[48] Teilhard, *The Human Phenomenon*, 32.
[49] Whitehead, *Process and Reality*, 111.
[50] Alfred North Whitehead, *Science and the Modern World* (New York: The Free Press, 1925), 101.
[51] Teilhard, *The Human Phenomenon*, 152.
[52] Whitehead, *The Function of Reason* (Boston: Beacon Press, 1958), 2.

explanation for how more complex organisms, comparatively deficient in survival power, could ever have evolved.[53] Both Teilhard and Whitehead detect an upward trend in evolution, a great "counter-agency"[54] to the entropic dispersion of preliving matter that is driving the living world into greater complexity and deeper consciousness. The universe not only falls but through its radial centers climbs toward the materially improbable, as though evincing an "inverse form of gravitation."[55]

While it was still possible for Daniel Dennett to argue in the mid-1990s that "evolution is a mindless, purposeless, algorithmic process," making Teilhard's orthogenetic vision a "loser" among scientific hypotheses,[56] the state of the life sciences several decades later looks quite different. Dennett's neo-Darwinian horse, while leading the paradigmatic pack for much of the latter half of the 20th century, has since lost its stride. Genetic reductionism failed to deliver on its promise to explain life. Weismann's trump card against Lamarckian ideas—that the barrier between somatic and germ cells prevents any possibility of inheritance of acquired characteristics—has been severely qualified if not nearly demolished by more recent research in niche construction, epigenetics, lateral gene transfer, and developmental biology.[57] Rather than viewing evolution as driven by genetic algorithms, contemporary biology is coming to terms with the fact that genes are tools used by living cells, which like all organisms are not passive victims of fixed environmental conditions but agents participating in their own evolution.[58]

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[53] Ibid., 3,7.
[54] Ibid, 25.
[55] Teilhard, *Toward the Future*, 187.
[56] Dennett, *Darwin's Dangerous Idea* (New York: Simon and Schuster, 1995), 320.
[57] Neuhof Moran, Michael Levin, and Oded Rechavi, "Vertically- and horizontally-transmitted memories - the fading boundaries between regeneration and inheritance in planaria." *Biology Open* 5/9 (2016): 1177-1188.
[58] Michael Levin, "Darwin's agential materials: evolutionary implications of multiscale competency in developmental biology," *Cellular and Molecular Life Sciences* 80 (2023):142. See also Michael Levin, "The Computational Boundary of a 'Self': Developmental Bioelectricity Drives Multicellularity and Scale-Free Cognition," *Front. Psychol.* 10 (2019): 2688. See also Alfonso Martinez Arias, "Cells, Not DNA, Are the Master

While Whitehead and Teilhard agree that the emergence of cellular life constitutes something of a "psychic mutation"[59] bursting through to a new phase of evolution, wherein reactions are no longer determined by the past but are "adapted to the capture of intensity" and "the clutch at vivid immediacy,"[60] they refrain from drawing any sharp boundaries between the living and nonliving worlds. Both see the germ of consciousness already implanted in the most primordial energetic rhythms, such that "the root principles of life are, in some lowly form, exemplified in all types of physical existence."[61] Life thus constitutes a massive acceleration, but not the origin, of the cosmic urge toward complexification of expression and intensification of experience. Teilhard acknowledges that life "can advance only by endlessly feeling its way,"[62] pointing to chirality (i.e., the contingent asymmetry of certain biomolecules shared by all living cells) and the fanning out of divergent branches of terrestrial biogenesis as examples of how "life exhausts only a part of what might have been."[63] But his sense of the role played by possibility in evolutionary trajectories only goes so far. Where Whitehead affirms open-ended creative advance with only a "particular providence for particular occasions,"[64] Teilhard detects "[a] single rising tide beneath the rhythm of the ages"[65] directing all life and mind on Earth toward a universal providential destination.

Architects of Life" in *Noēma* (May 30, 2023). https://www.noemamag.com/cells-not-dna-are-the-master-architects-of-life/

[59] Teilhard, *The Human Phenomenon*, 50.
[60] Whitehead, *Process and Reality*, 105.
[61] Whitehead, *The Function of Reason*, 21.
[62] Teilhard, *Toward the Future*, 171.
[63] Teilhard, *The Human Phenomenon*, 55.
[64] Whitehead, *Process and Reality*, 351.
[65] Teilhard, *The Human Phenomenon*, 59.

Although Darwin is usually credited with having discovered the theory of evolution, he rarely if ever used the word. In fact, "evolution" never appears in *The Origin of Species* (until the 6th edition) nor in *The Descent of Man*. Evolution, from the Latin *evolvere*, means the un-rolling of the in-rolled, the de-velopment of the en-veloped. Until at least the mid 19th century, evolution was usually discussed by naturalists only in reference to what is today called ontogenesis, or the development of an individual from a preformed seed or egg. The main problem was how to account for the development of individual living beings without violating the theological truth that God's act of creation took place only once. This early doctrine of evolution held that every developing organism was merely the "unrolling of something already given."[66] The notion that species themselves changed in any way over time was not considered.

The theory of evolution familiar to most 21st century students of biology, while being prefigured in the speculative writing of Descartes,[67] Comte de Buffon,[68] and Kant,[69] did not gain widespread acceptance until Lamarck, Alfred Russel Wallace,[70] and Darwin gave it a more secure theoretical and empirical basis. Better termed "transformism," the general theory "affirms

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[66] Etienne Gilson, *From Aristotle to Darwin and Back Again: A Journey in Final Causality, Species, and Evolution*, trans. by John Lyon (Indiana: University of Notre Dame Press, 1984), 50. Gilson's historical study of the place of teleology in biology is instructive despite his disdain for Teilhard's revision to the Catholic doctrine of original sin, dismissing it as "theology-fiction." See Gilson's *Les Tribulations de Sophie* (Paris: J. Vrin, 1967), 97.

[67] In the *Principles of Philosophy* (part III, ch. I, 45-46), Descartes writes: "…we come to know much better the nature of Adam and that of the trees of Paradise if we have examined how children are formed bit by bit in the wombs of their mothers and how plants spring from their seeds, than if we only considered what they were when God created them…we might be able to see clearly that the stars and the earth and at length the entire visible world could have been produced, as it were, from several seeds…if we describe it only as it is rather than as we believe that it was created." Quoted in Gilson, *From Aristotle to Darwin and Back Again*, 40.

[68] In his *Natural History of Animals*, Buffon discussed the implications of admitting that species are related to each other within larger families: "all animals have issued from only one single animal which, over the course of time, has produced, through perfecting itself and through degeneration, all other races of animals." Quoted in Gilson, *From Aristotle to Darwin and Back Again*, 48.

[69] In the *Universal Natural History and Theory of Heaven* (Arlington, VA: Richer Resources Publications, 2008), Kant writes: "Perhaps a succession of millions of years and centuries is to flow by before the sphere of developed nature in which we find ourselves grows to the perfection now inherent in it" (107).

[70] Unlike Darwin, with whom he co-discovered Natural Selection, Wallace came to understand the reality of evolution as evidence of cosmic purpose. See *The World of Life: A Manifestation of Creative Power, Directive Mind and Ultimate Purpose* (London: Chapman and Hall, 1914).

that animal or vegetable species have changed in the course of time, no matter how these changes are explained."[71] Only the proposed mechanism underlying this change separates Darwin and Lamarck, who are otherwise in complete agreement against creationism.

Lamarck developed his theory in a time when scientists were not concerned that presenting their work in a philosophical manner would in any way discredit them in the eyes of their audience.[72] Darwin, by contrast, avoided the expansive reasoning characterizing such works, and instead focused only on what could be derived from assembling masses of particular facts. Nonetheless, Lamarck must be credited with having first made the idea of transformism plausible.

In his main work, *Zoological Philosophy*, Lamarck writes:

> …since all living bodies are productions of nature, she must herself have organized the simplest of such bodies, endowed them directly with life, and with the faculties peculiar to living bodies. [And] by means of these direct generations formed at the beginning both of the animal and vegetable scales, nature has ultimately conferred existence on all other living bodies in turn.[73]

Lamarck recognized that species are not fixed essences but changing forms. He attempted to explain the reason for the changes in terms of a variation in the surrounding environment. Here, he and Darwin are in agreement. However, Lamarck, according to Gilson, "…does not mean that the environment acts directly on the organism, but that it forces the organism to modify itself in order to adapt to the new surroundings."[74]

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[71] Gilson, *From Aristotle to Darwin and Back Again*, 41.
[72] Ibid., 42.
[73] J.B. Lamarck *Zoological Philosophy*, trans. by Hugh Elliot (New York: Bill Huth Publishing, 2006), x.
[74] Gilson, *From Aristotle to Darwin and Back Again*, 44.

Darwin's theory of Natural Selection, in contrast, appeals only to a pre-given environment to explain the changes seen in organisms. The only quality Darwin saw as intrinsic to organisms themselves was the desire to survive and reproduce in ruthless competition with others. Unlike Lamarck, who thought an organism adapted by making "more frequent use of some of its parts which it previously used less, thus greatly [developing] and [enlarging] them,"[75] Darwin's theory of Natural Selection offers little if any evolutionary autonomy to organisms (the little they do have would come via sexual selection). Under the theory of Natural Selection, a change in the form of a species was the result of a series of random genetic variations selected for by the harsh realities of a given environment.

Lamarck's attempt to explain evolution by way of acquired characteristics, which are learned within the single lifetime of an individual due to its needs and desires and then passed on to offspring, is still a teleological view of the living world. It is similar to Aristotle's understanding of organisms, which "working from within by their substantial form, progressively shape their matter according to the type of perfected being which they tend to become."[76] Dispensing with the idea of each species having been created ready-made by a transcendent God, Lamarck instead "has caused the finality of God's thought to descend into the interior of nature."[77]

We see here an affinity between the thought of Lamarck, Teilhard, and Whitehead, as each sees evolution as an inwardly creative process motivated by a drive toward perfection. Darwin's theory of Natural Selection left no room for directionality or for an efficacious and

[75] Lamarck, *Zoological Philosophy*, 235.
[76] Gilson, *From Aristotle to Darwin and Back Again*, 46-47.
[77] Ibid., 48-49.

affective *within* helping guide the development of the *without*. Further, in Whitehead's view, the emphasis on competition in the Darwinian doctrine has found unsavory social application:

> The contrast between the dominant theories of Lamarck and Darwin made all the difference. Instead of dwelling on the brotherhood of man, we are now directed to procure the extermination of the unfit.[78]

That said, the mechanism of Natural Selection that Darwin discovered was in no way denied by Teilhard or Whitehead. The issue is rather straightforward: while few mechanists admit purpose in nature, there are just as few finalists who would deny the many natural functions of organisms displaying a mechanical aspect.[79] But what "would the mechanical energies themselves be without some *within* to feed them?"[80] Teilhard and Whitehead are at a loss to understand how the trajectory of evolution, whether cosmic or biological, could advance without accepting some kind of "fundamental impetus" driving it forward from within. But again, Teilhard does not deny Darwin's mechanisms; he merely finds that they alone are incapable of explaining the plain facts. Teilhard insists that

> life proceeds not only by strokes of luck, but strokes of luck that are recognized and grasped, that is, psychically selected. … Understood correctly, Neo-Lamarckian 'antichance' is not merely the negation, but on the contrary, the utilization of Darwinian chance. There is a function of complementarity between the two factors—a 'symbiosis,' one might say.[81]

Christogenesis

[78] Whitehead, *Adventures of Ideas*, 36.
[79] Gilson, *From Aristotle to Darwin and Back Again*, 105.
[80] Teilhard, *The Human Phenomenon*, 97.
[81] Ibid.

In addition to the integration of chance and decision, Whitehead affirms with Teilhard that "a satisfactory cosmology must explain the interweaving of efficient and final causality."[82] But to my mind, Whitehead strikes a better balance between the contingency and necessity of future progress. In Whitehead's scheme, telos is unmistakably evident in the decisions of individual occasions of experience and in the enduring biological organisms they compose. In the larger arc of cosmic and Earth evolution, he notes an overall aim at intensified Beauty, but insists upon its epochal variation (i.e., the aim at Beauty is realized in various ways with various types of order severally dominant in different cosmic epochs).[83] Rather than imprisoning creatures in the curvature of Omega, Whitehead recognizes "a factor of anarchy" in their self-creative decisions.[84] Here his Jamesian inheritance of pluralistic realism shows itself, as Whitehead resists both idealist and evolutionary Absolutes in favor of a radically empirical acknowledgement that, in James' words, we live in a "strung-along unfinished world in time."[85]

Still, for James, as for Whitehead, once life has hominized and become self-conscious, the question of what human beings decide to do with their earthly freedom becomes acute. "When we come to mankind, nature seems to have burst through another of its boundaries."[86] In another sense, according to James, "Philosophies are intimate parts of the universe, [expressing] something of its own thought of itself. …Our philosophies swell the current of being, add their character to it."[87] In the human, reflective thought breaks through the surface of biological instinct, generating Teilhard's new noöspheric layer of the Earth.[88] And so, Teilhard's faith in the Christogenesis of humanity may be understood if not as a hyperphysical inevitability than at least

[82] Whitehead, *The Function of Reason*, 28.
[83] Whitehead, *Adventures of Ideas*, 201, 265.
[84] Whitehead, *The Function of Reason*, 33.
[85] William James, *A Pluralistic Universe* (Longmans, Green, and Co. New York: 1909), 128.
[86] Whitehead, *Modes of Thought*, 26.
[87] James, *A Pluralistic Universe*, 317.
[88] Teilhard, *Toward the Future*, 173.

as a meta-moral possibility, if only we may learn to love one another as members of one complex body. His vision is an invitation to participate in a "common faith in a future of the earth."[89]

> …for that man [who recognizes Christogenesis as the end of anthropogenesis], everything, in every element and event of the universe, is bathed in light and warmth, everything becomes animate and a fit object for love and worship."[90]

Teilhard's call for the renewal of Christian faith involves a threefold transformation of its main dogmas. He insists that we come to relate to the divine as: 1) vast and mysterious as the Cosmos, 2) immediate and all-embracing as Life, and 3) linked to our human efforts on the Earth.[91]

The first requirement is a result of Teilhard's own experience as a scientist learning about the immensity and complexity of the universe. As his knowledge of nature increased, his former faith began to seem childish. This tension between scientific facts and religious revelation allowed him, throughout his life, to share in the anxieties felt by so many non-believers. But like many Christian natural philosophers before him, he was able to find a way to bring together the Bible and the Book of Nature. For Teilhard, there is "a secret message explanatory of the whole of Creation…allowing us to feel God in everything we do and in everything that is done to us": the cosmos is Christ incarnate.[92] It is this secret that, when revealed within one's heart (for it cannot be outwardly seen), demonstrates the conjunction of both humanity's heavenly and earthly attractions. The vast universe, inclusive of the mass of humanity, becomes the mysterious body of God.

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[89] Teilhard, *Toward the Future*, 203.
[90] Ibid., 204.
[91] Teilhard, *The Heart of Matter*, 212.
[92] Ibid., 216.

The second requirement stems from Teilhard's plea for priests to engage more fully with the world, rather than remaining merely "the people who bury you."[93] He finds it imperative that believers must not only study within religion in order to defend it, but apply their passionate religiosity to other fields, especially to science, where the disheartening metaphysical assumptions of materialism are so often the default dogma. The natural world, studied religiously as Christ incarnate, becomes another source of divine revelation. As Owen Barfield remarks in a similar spirit, "There will be a revival of Christianity when it becomes impossible to write a popular manual of science without referring to the incarnation of the Word."[94]

To meet the second requirement, Teilhard also calls for a renewed appreciation of the power of love, which duty-based moral theory has tended to recoil from. There is no more powerful force than love in the lives of human beings, and a religion that does not embrace its transformative potential has no future.

The third requirement is related to the second but is aimed specifically at the potential otherworldly tendencies of Christianity, concerned more with the salvation of separate souls than with the collective evolution of the Earth. Earthly life cannot be understood as a mere passage to the next world. There is nothing more important in Christianity than the incarnation: the entrance of the divine fully into this world. It expresses God's willingness to suffer and die for the redemption of every creature and for creation as a whole.

In order to feel at home on Earth, and to take responsibility for its flourishing, it is also important to remember that what is below is like what is above, that eternity participates in time,

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[93] Ibid., 217.

[94] Owen Barfield, *Saving the Appearances: A Study in Idolatry* (Middletown, CT: Wesleyan University Press, 1988), 164. The trick, of course, is not to succumb to the creationist temptation to imagine God as an external engineer who designed nature from beyond nature. God creates by living and dying with the evolving creatures of the world.

and that matter is spirit in nuce. Humanity, barely conscious of its own role in the matter, finds itself in the midst of one of Earth's major evolutionary transitions, a decisive moment whose window is closing. If we find a way to have faith in the future, we may feel that the presence of Omega is already with us, luring us onward despite the apparent improbability of success.

According to N.M. Wildiers, the central concern of Teilhard's Christology is the problem of secularization.[95] Religion has not been able to keep pace with the psychosocial transformations precipitated by modern science and technology. Whitehead also noted the urgency of the philosophical task of secularizing the concept of God's functions in the world.[96] Nearly a century later, tired debates between religion and science continue to rage, signaling the difficulty of the task. To the extent that human beings need meaning as much as food to live, the task is now something of an emergency. Modern people generally lack an intellectually convincing and ethically motivating vision of our purpose on this planet. Consumer capitalism is happy to fill the void. If only it could. The point is not to pretend to offer some deductive solution to the world in the vein of Spinoza or Hegel, but "a cluster of axial lines of progression," as Teilhard put it.[97]

One of the most striking convergences in Teilhard and Whitehead's work concerns their shared intuitions about how theology must shift from imagining God as an impassive substance to God as a relational process. In Teilhard's terms, he seeks to replace the traditional Scholastic "metaphysics of being" with a "metaphysics of union" or "unification."[98] He grants at least the initial pole of God a self-subsistent unity, which he describes as haloed by a necessary circumference of multiplicity or "creatable nil," which "by passive potentiality of arrangement"

[95] "Foreword" to Teilhard, *Christianity and Evolution*, 9.
[96] Whitehead, *Process and Reality*, 207.
[97] Teilhard, *Toward the Future*, 164.
[98] Ibid., 193.

or unification provides "a possibility of being, a prayer for being: a prayer…which it is just as though God had been unable to resist."[99] Teilhard could here be said to have rendered into poetry Whitehead's metaphysical account of God's primordial envisagement of eternal objects, "abstracted from his commerce" with the world but "yearning after concrete fact."[100] Teilhard goes on to describe the requirements of divine creation or actualization of passive possibilities in terms that again correspond remarkably well with Whitehead's notion of God's consequent nature: "in order to create…God has inevitably to immerse himself in the multiple, so that he may incorporate it in himself. … No creation without incarnational immersion."[101] For Teilhard as for Whitehead, God does not create by fiat, but by "magnetic influence."[102] God's initial aim at unification reverberates within each unit, "in unison of becoming with every other creative act,"[103] luring each creature toward what would be most beautiful for it by reflecting its greatest potential back to it. Both account for evil in the same way, by admitting that God is not all-powerful in the sense of forcefully contending tit-for-tat in the disputes of finite creatures. How a creature decides to respond to the divine lure is out of God's hands, though whatever happens, God will love what can be loved in it, dismissing the rest into triviality.[104]

Despite these resonances, Whitehead's account of a dipolar divinity offers no hint of the providential climax evident in all Teilhard's writing on the subject of Omega. Unlike the primordial nature, which despite knowing all possibilities has as yet no one else to know with, Whitehead describes the consequent nature as a growing consciousness and "fellow-sufferer."[105] Making one last effort at convergence between these two leading lights of process thought in the

[99] Teilhard, *Toward the Future*, 194-195.
[100] Whitehead, *Process and Reality*, 33-34.
[101] Teilhard, *Toward the Future*, 196, 198.
[102] Ibid., 197.
[103] Whitehead, *Process and Reality*, 345.
[104] Ibid., 346.
[105] Ibid., 390.

last century, might we then say that the intensity of God's consciousness and power of love depends in some measure upon our human willingness to participate in personalizing all our earthly relations? Can we coevolve on purpose while steering clear of the evils of eugenics?[106] Doing so will require an as yet unachieved coordination among each of our highest ideals: the Goodness of religion, the Beauty of art, the Justice of politics, and the Truth of science. "The essential criterion of truth," according to Teilhard, "is its power of developing indefinitely," not only without contradiction but such that all its partial statements form an ever more complementary whole.[107] In Whitehead's terms,

> truth itself is nothing else than how the composite natures of the organic actualities of the world obtain adequate representation in the divine nature…which evolves in its relationship to the evolving world without derogation to the eternal completion of its primordial conceptual nature. …[T]here can be no determinate truth, correlating impartially the partial experiences of many actual entities, apart from one actual entity to which it can be referred.[108]

God (whether perceived as real or conceived as ideal) thus plays a crucial role in human evolution, not as sole Creator out of nothing of an entirely capricious creation, but as common Mediator and creative goad within a multifarious world-in-process. In Teilhard and Whitehead's heart-minds, God becomes the shared referent of all finite truth claims, infinite in the capacity to instigate novelty and to swell with love in an integral embrace of the good that emerges. They offer not only a theological intervention upon outworn dogmas stunting human growth. Their

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[106] Teilhard, *The Human Phenomenon*, 202.
[107] Teilhard, *Toward the Future*, 165.
[108] Whitehead, *Process and Reality*, 12-13.

work is also a theological invitation to a scientifically informed and mystically inspired "love of evolution."[109]

[109] Teilhard, *Toward the Future*, 205, 202.

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