

In the Beginning Was the Wort: A New Natural Theology of Meaning for Ecological Catastrophe

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journals.sagepub.com/home/atr**Charlotte Sleigh** 

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Abstract

This paper builds upon a recent corpus of popular science that has elevated previously unsung members of the biosphere—“worts.” It argues that the corpus constitutes a new natural theology, a search for meaning in the biosphere, and suggests a theological underpinning to what its authors intuit: that worts give meaning. To do this, the paper draws on Eduardo Kohn’s *How Forests Think* (2013) and its examination of meaning as a ubiquitous feature of the multispecies ecosystem. Following on from Kohn, two key arguments are made. First, Kohn’s posthuman anthropology is compatible with a Thomist treatment of organisms in terms of their distinct, life-orientated telos. Second, the current context of potential human extinction puts a life-orientated telos in a new light, reviving the validity of teleological thinking. Sharing the fate of nonhuman subjects, rather than treating them as scientific objects, authors and readers of the new natural theology find meaning among worts.

Keywords

meaning, natural theology, semiotics, teleology, mass extinction, Eduardo Kohn, Thomas Aquinas

Introduction

Although it did not exist in the beginning of the biblical time-narrative, the *wort* has been in place since the post-Roman European era: a “plant used as a source of food or for medicinal purposes.”¹ Today rendered via the Romance *herbs*, which are leaves, the original worts could also be roots—the plant stock and the etymology *wort/root* are as

¹ *Oxford English Dictionary*, s.v. “wort, n.1”, July 2023. DOI: 10.1093/OED/9840458081.

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one. Although these inhabitants of old Europe might be cultivated (they grew in old Dutch, English, Germanic, and Icelandic soils), they also sprang up wild, sniffed out and grubbed up by hungry and ailing humans—*worted up*, as truffles by a pig. In this pre-Tyndallian life-scape, hunger and malady made meaning out of the very ground. The wort had *worth*, the power of becoming for flesh.

The *word*, at this time, was also the *wort*.² But by the time the former had transitioned to its modern spelling, the botanical *wort* sounded *weird*. Herbs and roots were for potions: species of *wortcunning*, as one Victorian collection of medieval recipes put it.³ St. John's wort brought rest; milkwort strengthened cattle; and quinsywort healed that most painful of conditions. Growing, figuratively, in the dark places were bloodwort, staggerwort, and barrenwort. Tangled in their etymological roots, even the good worts were suspect.

This paper takes the wort—as any wild, farmed, or feral organism that speaks to humans—seriously. Attending to the wort alongside anthropologist Eduardo Kohn allows us to see its communication of meaning as a general feature of the multispecies ecosystem, within which conscious, human referentiality is just one parochial example. By setting Kohn's analysis alongside that of Aquinas, we see moreover that these multispecies meanings, in their very decentering from human exceptionalism, can yield the kind of capital-M Meaning for which the readers of popular science seek. As a thing, if not as a word, the wort really was there from the beginning, the first days of human life: knitting us deeper into the world, and making our entanglement meaning-full.

In its first section, the paper delineates and characterizes the corpus of wort-filled texts (books and films) that constitute the recent wave of new natural theology. Its organisms of interest are characterized as lying outside of the usual modern scientific and theological bestiaries and botanies, its key phenomena as networks and symbioses. Meanwhile, the corpus's nonscientistic methods of knowing are shown to be congruent with those phenomena, being non-hierarchical and collective in nature. Its epistemologies disrupt the subject/object binaries that define both modern science and conventional natural theology. The spiritual nature of these texts is also highlighted, their basis very often resting in Indigenous ways of knowing and being in the world.

The paper moves in its second section to a brief review of natural theology, to better position its wort-filled corpus. What distinguishes the new natural theology from previous (and some contemporary) versions is its nontranscendent orientation. In this sense, it is unlike both scientism and conventional theology, pointing up the common commitment to transcendence of both these fields even as it moves beyond it. Rather than positioning the new natural theology as direct antithesis to an epistemology of transcendence, the concept of an immersive ontology is introduced as an alternative.

In its final and most substantive section, the paper examines the distinctiveness of the new natural theology, using the work of anthropologist Eduardo Kohn to provide a

² The homonym appears to be accidental. I am grateful to John Hines (personal communication) for his clarification of the words' roots.

³ Thomas Oswald Cockayne, *Leechdoms, Wortcunning, and Starcraft of Early England: Being a Collection of Documents, for the Most Part Never Before Printed, Illustrating the History of Science in this Country before the Norman Conquest* (London: Longman, Green, Longman, Roberts, and Green, 1864–1866).

sympathetic account of how its meaning-making works. Kohn's pivoting of meaning on the perpetuation of life is shown to be compatible with Aquinas' teleological account of nonhuman animals. The prospect of mass extinction is discussed as the prompt that enables the recovery (among Western traditions) of teleology as a legitimate frame for natural theology, and perhaps for science.

A final introductory word on what this paper is and is not; it may be objected that in attempting to highlight a new natural theology, this paper has stretched the meaning of theology beyond even the traditionally capacious tolerance of Anglicanism. My license to treat it as such comes from the allied fields of science and technology studies (STS) and the history of science. The corpus of primary literature under discussion here occupies much of the same publishing niche as did the panoply of nineteenth-century books about nature written from Christian and Christian-adjacent perspectives.⁴ If we accept the Victorians' search for meaning in these books as being natural theological,⁵ then in a historical or functional sense, we may regard the works as a continuation of the same. Conventional natural theology, as an enterprise that attempts to provide rational grounding for theistic belief, has squeezed out these and other efforts (historical and contemporary) to meditate on and mediate nature within a theological horizon.

Theologically, this paper's trajectory may also suggest that the insights of Kohn and others encourage a theology of nature as distinct from, though related to, the theology of creation more frequently addressed in eco-theology.⁶ Readers will know that many of the themes of this paper—extinction, epistemic non-dualism, and posthumanism—are also addressed in this burgeoning field. It is beyond the scope of this paper to engage with these often-brilliant attempts to build a robust and responsible theology that responds to the needs of our era.⁷ Nor does this paper dwell on the contentious topics of pantheism and panentheism implicit in a "theology of nature." Instead, the paper might be understood to treat theology as a source of meaning generative of awe and sacrificial commitment, as well as ontologically sufficient for trust in the face of our existential and intellectual limitations.

The corpus of new natural theology

Over the past few years, there has been a growth in natural-historical and scientific books and films about what might be called the "kingdoms with no day," that is to say, domains of organism that do not explicitly feature in the story of six-day creation. These are

⁴ Bernard Lightman, "Marketing Knowledge for the General Reader: Victorian Popularizers of Science," *Endeavour* 24, no. 3 (2000): 103–104; Jonathan R. Topham, "Scientific Publishing and the Reading of Science in Nineteenth-Century Britain: A Historiographical Survey and Guide to Sources," *Studies in History and Philosophy of Science Part A* 31, no. 4 (2000): 559–612.

⁵ Peter Brok, *Understanding Popular Science* (New York: Open University Press, 2006), 46–47.

⁶ Peter Harrison, "What Is Natural Theology? (And Should We Dispense with It?)," *Zygon: Journal of Religion and Science* 57, no. 1 (2022): 136.

⁷ Celia Deane-Drummond, *Eco-Theology* (London: Darton, Longman and Todd, 2008).

organisms that have historically been overlooked by science and popular representation alike, the least in the kingdom(s) of nature. They are not plants or animals as we ordinarily think of them; not lions, eagles, or dinosaurs, but mosses, fungi, lichens, and protists (early nucleated organisms). Notable examples of books constituting this trend include Robin Wall Kimmerer's botanical narrative *Braiding Sweetgrass* (2013), Peter Wohlleben's *The Hidden Life of Trees* (2017), Merlin Sheldrake's fungal adventure *Entangled Life* (2020), and Suzanne Simard's *Finding the Mother Tree* (2021).⁸ In terms of films, one might point to the documentaries *Fantastic Fungi* (2019) and *My Octopus Teacher* (2020).⁹ A similar trend is afoot in the world of museums and galleries; in 2022, the science-based Wellcome Collection presented the show *Rooted Beings*.¹⁰ Among the bona fide animals that do feature in the corpus, previously alien cephalopods (least-human-most-intelligent) have become eminently narratable.¹¹ Plants feature more strongly in this new natural history than in the past century, and although these do constitute a kingdom with a named day, they are traditionally placed lower down the *scala naturae*, the ladder of created perfection. They are even excluded from Aquinas' typology of creation; the theologian glosses Genesis 1:11 as a description of their potential rather than their actual creation.¹² More to the point, when trees are the subject of the new natural history, it is more often than not their underground, mycorrhizal (fungal) communication networks that are the real subject of interest.¹³

The organisms at the heart of these texts share a pool of characteristics that are of particular interest to the writers and filmmakers concerned. They exhibit symbiosis and participate in networks that share information and resources among multispecies communities. Collectively, they suggest a less competitive and less hierarchical model for the emergence and continuation of life on earth than post-Darwinian narratives have suggested. In turn, they enroll their human readers into the possibilities of such modes of life—into participation in a symbiotic and flourishing web of meaning. The means of this enrollment is an eschewal of objective science, from nineteenth- and twentieth-century

⁸ Robin Wall Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants* (London: Penguin, [2013] 2020); Peter Wohlleben, *The Hidden Life of Trees: What They Feel, How They Communicate* (London: Collins, 2017); Merlin Sheldrake, *Entangled Life: How Fungi Make Our Worlds, Change Our Minds, and Shape Our Futures* (London: Vintage, [2020] 2021); Suzanne Simard, *Finding the Mother Tree: Uncovering the Wisdom and Intelligence of the Forest* (London: Allen Lane, 2021).

⁹ Pippa Ehrlich and James Reed, dirs., *My Octopus Teacher* (Los Gatos, CA: Netflix Originals, Netflix, 2020); Louie Schwartzberg, dir., *Fantastic Fungi* (Los Angeles, CA: Moving Art, general release, 2019).

¹⁰ [Bárbara Rodríguez Muñoz with Emily Sargent], curators, *Rooted Beings* (London: Wellcome Collection, 2022). Accessed May 19, 2022. <https://wellcomecollection.org/exhibitions/YZeNOxEAACQAXM-0>.

¹¹ As intelligent but water-based, these flout the Thomist *scala naturae* that has gone on to inform populist taxonomy.

¹² Thomas Aquinas, *Summa Theologiae* I q. 69 a. 2.

¹³ Jeremy Lent, *The Web of Meaning: Integrating Science and Traditional Wisdom to Find Our Place in the Universe* (London: Profile, 2021), 43–44; Sheldrake, *Entangled Life*, 1–2; Simard, *Finding the Mother Tree*, 5; Wohlleben, *Hidden Life of Trees*, 49–55.

models of scientific epistemology, and a pursuit of knowledge instead as a multi-subjective conversation—dialog with fellow organisms.

Such a dialogical method for the pursuit of knowledge contrasts with that of orthodox science. For the past couple of centuries, the so-called “scientific method” has been a process of objectification.¹⁴ Within the disciplines adjacent to natural history, the scientific method was characterized by a scientist capturing and recording nature, turning it into an object of study. The scientist goes out with his (or occasionally her) butterfly net, bags a specimen, pins it to a sheet, and trades the information with other collectors around the world to make biological knowledge.¹⁵ The new natural theological texts reject the myth of objectivity that accompanies such conventional science. Jeremy Lent’s *Web of Meaning* is one of many new natural theological texts that give prominence to systems-theory, the non-reductive view of nature that ultimately entangles the researcher him or herself with their objects of study. “Deep down, we are part of the same web of life that we’re studying [. . .] In place of cold objectivity, an engaged approach to the universe invites feelings of awe and reverence. [. . .] These realms of participatory engagement form the intersection points between science and spirituality.”¹⁶ “We are kin,” says scientist Araceli Camargo. “All living beings which inhabit this earth are contained within nature [. . .] There is no divide or hierarchy between us [. . .].”¹⁷

New natural theological authors and directors, then, present themselves as learning not about but *from* nature. *Rooted Beings* invited its audiences to “reimagin[e] our relationship with plants, and what we might learn from them”,¹⁸ “to embark on a meditative reflection on the world of plants and fungi” and consider “what we might learn from

¹⁴ Mary Midgley, *Science as Salvation: A Modern Myth and Its Meaning* (London and New York: Routledge, 1992), 75–76; Londa Schiebinger, *Nature’s Body Gender in the Making of Modern Science* (New Brunswick, NJ: Rutgers University Press, 2004 [1993]); Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, MA: Harvard University Press, 2004).

¹⁵ Paul Lawrence Farber, *Finding Order in Nature: The Naturalist Tradition from Linnaeus to E. O. Wilson* (Baltimore, MD: Johns Hopkins University Press, 2000). Although the corpus of words under investigation in this paper reflects the movement of some scientists towards a more open epistemology, scholarship in Science and Technology Studies suggests that much if not most science and science communication is still conducted under the orthodox scientific paradigm of objectivity/objectivism. See Jean-Baptiste Gouyon, Cristiano Turbil, Franziska Kohlt, Kristian Nielsen, and Charlotte Sleigh, “Science Communication and Scientism: Historical Perspectives,” in *Science Communication: Taking a Step Back to Move Forward*, ed. Martin W. Bauer and Bernard Schiele (Paris: CNRS Editions, 2023), 385–96. Needless to say, Darwin’s famous reference to the entangled bank at the close of the *Origin* does not extend to an epistemological entanglement of Darwin within the world he described.

¹⁶ Lent, *Web of Meaning*, 331.

¹⁷ Araceli Camargo, “Nature as Health,” in *This Book Is a Plant: How to Grow, Learn and Radically Engage with the Natural World*, ed. Wellcome Collection (London: Wellcome Collection, 2022), 125–26.

¹⁸ Wellcome Collection, *Rooted Beings*, exhibition leaflet (London: Wellcome Collection, 2022), 4.

plant.”¹⁹ The title *My Octopus Teacher* puts this relationship most succinctly: the filmmaker learns from the cephalopod, rather than communicating knowledge about it. Sheldrake opens his book with an acknowledgment of thanks, not to his professors or teachers, but “to the fungi from which I have learned.”²⁰ Michael Pollan writes about the plant extract caffeine while in withdrawal from its molecular entanglements and (like Sheldrake) consumes his hallucinatory, fungal subjects so that they may inscribe themselves directly upon his neurons.²¹

Other books within the corpus present less far-out examples of and arguments for engaging with nature. In one of her videos, Kimmerer asks viewers to learn from mosses and their simple, undemanding lifestyle. Authors routinely cite the extensive research showing how time spent among trees or other “natural” landscapes improves well-being.²² Forestry expert Peter Wohlleben speculates that in an ancient forest, “most messages exchanged between trees are contented ones,” and that on some level, we are able to register these calming and health-promoting communications when we walk among them.²³ Richard Louv coins “nature deficit disorder” as a tag for thinking about the alienation that many of us experience, arguing that it powers a vicious circle: what we do not experience, we cannot love, and so fail to protect—thus creating a planet that is ever more miserable for humans to inhabit.²⁴ Cognitive neuroscientist Camargo writes, “Health is an ecological phenomenon. [. . .] If we want human health to flourish, we must start by allowing our Planet to heal.”²⁵ This recent crop of science writing, then, describes a nature that knits us into its being and so enables wiser and more fulfilled modes of life—an outcome that is often presented explicitly as spiritual in nature. The desire to learn from, rather than about, nature, speaks, first, of a recognition that science has too often been an agent of destruction and imperialism and, second, of a desire to find a means of meaning-making that is gentler and wiser.

The notion that Indigenous knowledge is a complement or even corrective to enlightenment science also features prominently in these texts. Academic botanist Robin Wall Kimmerer puts the epistemology of her day job—scientific method—in a minority position by flagging two other ways of knowing in her book’s subtitle, *Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*.²⁶ For Kimmerer, the teachings of plants are interwoven with her insights as a member of the Citizen Potawatomi Nation. Sometimes she uses science to vindicate this latter knowledge, writing of plant communication: “[t]here is now compelling evidence that our elders were right [about this

¹⁹ [Muñoz with Sargent], *Rooted Beings* website.

²⁰ Sheldrake, *Entangled Life*, unpaginated acknowledgements.

²¹ Michael Pollan, *This Is Your Mind on Plants: Opium-Caffeine-Mescaline* (London: Penguin, 2021).

²² Rupert Sheldrake, *Science and Spiritual Practices: Reconnecting Through Direct Experience* (London: Coronet, 2017), 68–73.

²³ Wohlleben, *Hidden Life of Trees*, 228.

²⁴ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005).

²⁵ Camargo, “Nature as Health,” 129.

²⁶ Kimmerer, *Braiding Sweetgrass*.

topic].”²⁷ Elsewhere, however, she reflects that her role as scientific teacher is simply to “lead [students] into the presence and ready them to hear”—that is, to enable them to “become indigenous.”²⁸

Kimmerer’s success and influence is evident in the recent Wellcome Collection exhibition *Rooted Beings*.²⁹ The show’s rubric emphasized how Western scientists have appropriated Indigenous knowledge about plants; “Colonial Violence and Indigenous Knowledge” forms one of the show’s three themes.³⁰ Patricia Domínguez’s *Vegetal Matrix* (2021) formed a major set piece for the show as a whole, an assemblage of Mesoamerican-futurist altars for various plants which attempt, perhaps, to provoke London viewers to imaginatively resituate themselves as Indigenous plant companions. Lent’s book *The Web of Meaning*, covering many of the usual natural phenomena of symbiosis and networks, is perhaps the most explicitly spiritual account of these new modes of science: “It’s a worldview that links together scientific findings in recent decades . . . showing how they affirm profound insights from the world’s great wisdom traditions, such as Buddhism, Taoism and . . . Indigenous peoples around the world.”³¹ Recent studies in STS coincide with popular literature in affirming the implicitly unified nature of Indigenous knowledge, inextricably “scientific” and “spiritual.”³² Indigenous epistemologies also tend not to separate the knowing subject from the known world. For members of the Nehiyawak (Plains Cree nation), “knowledge and the knower are intimately interconnected”; “the phrase ‘coming to know’ means that a Nehiyaw (Cree person) is on a quest to become wiser in living properly in their community and in nature.”³³ The networked, symbiotic creatures of the new natural theology sit perfectly within a way of knowing the world that is in itself non-hierarchical and collective, increasingly tagged as Indigenous.

The new natural theology has found great success, suggesting that it speaks meaningfully to a public that is—to cite an often-made observation—decreasingly religious yet increasingly hungry for spirituality. Merlin Sheldrake’s book has even been awarded the Royal Society prize for best popular science title, suggesting that in some quarters, at least scientists too have an appetite for such new engagements and entanglements with nature. Such spirituality is not, in the context of ecological catastrophe, a mere matter of

²⁷ Kimmerer, *Braiding Sweetgrass*, 19.

²⁸ Kimmerer, *Braiding Sweetgrass*, 222; 213.

²⁹ There has been criticism that settler-colonial and other White academics have been romantic and even extractive in their treatment of indigenous epistemologies. See Steve Breyman, Nancy Campbell, Virginia Eubanks, and Abby Kinchy, “STS and Social Movements: Pasts and Futures,” in *The Handbook of Science and Technology Studies*, 4th ed., ed. Ulrike Felt, Rayvon Fouché, Clark A. Miller, and Laurel Smith-Doerr (Cambridge, MA: MIT Press, 2016), 295. This critique has yet to filter visibly into popular texts and exhibitions.

³⁰ Wellcome Collection, *Rooted Beings*, 6–7.

³¹ Lent, *Web of Meaning*, 5.

³² Clapperton Chakanetsa Mavhunga, *Transient Workspaces: Technologies of Everyday Innovation in Zimbabwe* (Cambridge, MA: MIT Press, 2014), 17.

³³ G. S. Aikenhead and M. Ogawa, “Indigenous Knowledge and Science Revisited,” *Cultural Studies of Science Education* 2 (2007): 553.

fancy, but a recognition that a new way of knowing is needed in order to maximize chances of survival. Faced with the possibility of human extinction, meaning becomes a newly urgent quest. How and why should we live, in a world that is—possibly, demonstrably—ending?

Defining natural theology, old and new

Before we talk about this popular science corpus as a new natural theology, we need to define what is meant by the latter: its methods and its purposes.³⁴ Coined in English in 1622, the term made early-modern sense of a trend stretching farther back in time. In its Christian historical context, natural theology originated in the medieval tradition that nature is a book sitting alongside the book of revelation constituted by canonical scripture.³⁵ A second and closely related sense of natural theology followed on from this mirrored identification of nature and scripture, constituting a moral impetus to study nature.³⁶ If God had written it, it behooved humanity to read it. Yet a third sense followed from this, namely, an epistemological motivation and reassurance—as a communication from God, nature could be expected to be orderly and trustworthy; material study was both reliable and morally valid.³⁷ Ultimately, this epistemological trajectory shed its theological parentage and manifested itself as the will to “objectivity” grounded in lawlike nature.

What, exactly, material study might reveal was nevertheless open to question. Harrison contends that earlier “vertical” insights about God from nature were not supplanted but gradually supplemented by “horizontal” insights about nature in itself, derived from relationships between natural entities.³⁸ The process was not smooth or unidirectional, as is demonstrated by the natural theological tussles of the late eighteenth and early nineteenth centuries. This trend is related to a fourth sense of natural theology, in which the field constituted a flexible set of intellectual resources to infer the nature of God. John Ray’s *Wisdom of God Manifested in the Works of Creation* (1691) combined both cutting-edge “horizontal” findings with pious and Panglossian “vertical” ones. Joanna Collicutt and Alister McGrath have continued working within the fourth sense of natural theology, hoping to revive its legitimacy and value for the present day.³⁹ Their framework for doing so depends upon the redemption of nature and of the observer. Nature can point to God in virtue of its redemption through the incarnation of the Word. But not everyone can fully see its pointing. In order for a person to make a valid leap from nature to the transcendent, they must not merely observe but must have true “perception”—something like a Kantian,

³⁴ For a different taxonomy, see Alister E. McGrath, *Re-Imagining Nature: The Promise of a Christian Natural Theology* (Chichester: John Wiley & Sons, 2016), 18–21.

³⁵ Peter Harrison, *The Bible, Protestantism, and the Rise of Natural Science* (Cambridge: Cambridge University Press, 2001), 34–63.

³⁶ Harrison, *Bible, Protestantism*, 45.

³⁷ Harrison, *Bible, Protestantism*, 44; Charlotte Sleight, “Jan Swammerdam’s Frogs,” *Notes and Records of the Royal Society* 66, no. 4 (2012): 373–92.

³⁸ Harrison, *Bible, Protestantism*, 44.

³⁹ Alister E. McGrath, *The Open Secret: A New Vision for Natural Theology* (Oxford: Blackwell, 2008); McGrath, *Re-Imagining Nature*.

Spirit-given discernment. Thinkers in non-Christian traditions may get a hint of the transcendent from nature; however, McGrath insists, only those fully transformed in Christ can truly perceive it.

A century after Ray, William Paley famously wrote his *Natural Theology* (1802) to argue for the existence of God from natural observations. This, then, was a fifth, apologetic incarnation of natural theology. Brooke has given a sensitive defense of this much-derided text, arguing that Paley did not, in fact, “pretend [. . .] to give a deductive demonstration of God’s existence.”⁴⁰ Nevertheless, apologetic versions of natural theology have run tediously around and around these tracks for over two hundred years and show little sign of ever escaping their self-confirmatory bases.

In delineating the corpus of texts described by this paper as natural theological, I do not follow McGrath’s narrow and normative definition. I simply take the texts’ spiritual claims in good faith as an assertion of theological valence, which, in the light of their discussions of nature, can be read as natural theological. (In this, I also follow Harrison’s lead in claiming that natural philosophy was “always and already theological,” as opposed to attempting an epistemologically independent search for the theological.⁴¹) The corpus of worts may be situated pragmatically in a Western tradition of speaking about nature and “big questions,” indicating a historical continuity of genre even if precise definitions have shifted.⁴²

There are, nevertheless, specific continuities between new and historical Western forms of natural theology. Senses one and two are more or less compatible with the recent crop of texts; they assert vigorously the value of reading nature. Sense three—an epistemological assurance about the insights of nature—is also arguably present in the new corpus, if one allows that laws may be stranger and more complex than how Platonically-minded and reductivist scientists might wish. We begin to see the changes afoot in the new natural theology when we come onto senses four and five (transcendence and apologetics). McGrath’s account holds the line for an encounter with transcendence via natural theology, whereas the corpus of worts finds immanent meaning in nature. As such, the latter not only refuses McGrath’s version of theology but also its ontological and epistemological twin, modern science, which aspires to transcendent truths (“facts”), despite the manifested limitations of the inductively knowable. Traditional (that is, enlightenment) natural theology presumes that there is a God who, if all goes well, can be known through nature (apologetics); traditional (enlightenment) science does the same regarding “facts” or “laws of nature.”⁴³ Both are desperate attempts to leap the ditch between human knowledge and ultimate truth.

⁴⁰ John Hedley Brooke, “Revisiting William Paley,” *Zygon: Journal of Religion and Science* 57, no. 1 (2022): 143–44.

⁴¹ Harrison, “What Is Natural Theology?” 120.

⁴² John Hedley Brooke, *Science and Religion: Some Historical Perspectives* (Cambridge: Cambridge University Press, 1991); Lightman, “Marketing Knowledge for the General Reader,” 103–104; Topham, “Scientific Publishing and the Reading of Science in Nineteenth-Century Britain,” 559–612.

⁴³ Compare Nancy Cartwright, *How the Laws of Physics Lie* (Oxford: Clarendon Press; New York: Oxford University Press, 1983).

If we are to look back in time for post-enlightenment intuitions that ditch-jumping is unnecessary (as the corpus of worts shows, there are many more of them outside Europe and North America), we might well focus on Charles Peirce. Peirce generated his own version of natural theology—the so-called “neglected argument”—which argues for the reality of God via contemplation (“musement”) on the world.⁴⁴ Any muser, posits Peirce, will be struck by the “homogeneities and connections” between the three “universes” of ideas, empirical realities, and signs, and from this will come to hypothesize a God who, if real, is worthy of faith. (In a second step, he argues that the ubiquity of this experience provides further evidence of God’s reality.) Peirce’s final, abductive argument is that musing on God’s possible existence produces an idea of God which is compelling. Abduction produces not proof as such, but “a living, practical belief.”⁴⁵ God is something which, if real, would justify one’s faith and is therefore logically worthy of commitment. To put it another way, abduction produces “the satisfaction which would ultimately be found if the inquiry were pushed to its ultimate and indefeasible issue.”⁴⁶ The process of seeking satisfaction—exploring the suggestion of musement via abduction—is, in Peirce’s account, amenable to all methods of knowledge. Galileo’s scientific insight is allied to the “divinatory power [. . .] of a wasp or a bird.”⁴⁷

Brandon Daniel-Hughes has produced a thoughtful and affirming reading of Peirce’s controversial paper. Although he contends that it should not be seen as a linear, apologetic argument as I have presented it here, his treatment of it as a single, woven piece actually strengthens the sense of Peirce as presenting a “continuum of inquiry” between the spiritual and scientific.⁴⁸ Natural theology, Daniel-Hughes suggests, can thus “be reinvigorated as it sheds the timeworn task of finding faint echoes of special revelation in the natural world.”⁴⁹ Building on this insight is fertile work for theologians. How exactly does this continuum of inquiry respond to and develop the insights of musement? For Peirce, it always comes down to signs. At the beginning of his neglected argument, Peirce declares that signs are the “universe” that connects the other two universes of idea and reality. In his musement, however, Peirce seems to waver between seeing connections between the universes of idea and reality (that is, a connection that is *mediated* by signs) or between all three (that is, a connection between things *including* signs). Daniel-Hughes has gone on to flesh out the role of signs in religious communities of inquiry, suggesting that spiritual knowledge can be counted as “a variety of

⁴⁴ Charles Sanders Peirce, *The Collected Papers of Charles Sanders Peirce*, vols. 1–6, ed. C. Hartshorne and P. Weiss (Cambridge, MA: Belknap Press of Harvard University Press, 1931–1935), 6.452–493.

⁴⁵ Peirce, *The Collected Papers*, 6.485.

⁴⁶ Peirce, *The Collected Papers*, 6.485.

⁴⁷ Peirce, *The Collected Papers*, 6.477.

⁴⁸ Brandon Daniel-Hughes, “The Neglected Arguments of Peirce’s Neglected Argument: Beyond a Theological Dead-End,” *American Journal of Theology and Philosophy* 36, no. 2 (2015): 138.

⁴⁹ Daniel-Hughes, “The Neglected Arguments,” 139.

inhabited experimentation.”⁵⁰ The nature of signs—meaning—is an exciting and developing area for integrated knowledge.

While early-modern and modern natural theologians worried “can we infer reliable spiritual truths from the natural world?,” the new natural theology simply assumes that the natural world (which includes humans) is already suffused with such meaning.⁵¹ The new natural theology refuses to reason upward just as it dispenses with the pretense of objectivity. It works, in other words, from an immersive ontology whereby the knowing subject is entangled with its object/s of study. This need not rule out the transcendence of God; it simply rules out its necessary participation in an ontotheology of dualism. Aquinas’ account of God is an instructive exception; for him, God is wholly transcendent as “the One who Is,” or “the act of being itself subsisting,” and is thus more immanent to creatures than they are to themselves.

What is at stake in calling these worthy books and films natural theological? For some readers and viewers, it may release the theological arm that has been tied behind their back by twentieth-century secular Western culture. It may enable them to proceed from meaning to Meaning, to form a fully fleshed out and satisfying framework for being and acting in the world, such as many cultures in the world have valued. A recent podcast clarified this possibility for me. In it, ecologist Noah Charney is interviewed about his book *These Trees Tell a Story*, exploring the meanings that Charney reads from the landscape.⁵² On several occasions, he mentions how this practice connects with “the meaning of life.” Each time he does so, he gives a nervous laugh; one can almost hear the inverted commas around the phrase. Charney, it seems, knows that this is not “proper” scientific language, but only this kind of formulation seems to do justice to his life in the forest. Charney does not go so far as to mention God, and an invocation of “theology” to reflections on nature does not preclude atheist or nontheist forms of wortish spirituality. Acclaimed biologist Ursula Goodenough, for example, gives a heartfelt account of the meaning that she finds in nature while insisting that she has no need of God within her frame. She chooses, as she puts it, to “adopt no Beliefs and dwell in mystery.”⁵³ A theologian or a philosopher might, however, question what Goodenough means by belief. The Peircian notion of belief as being “deliberately and thoroughly prepared to shape one’s conduct into conformity with a proposition”⁵⁴ suggests more space for maneuver than Goodenough realizes—productive space for theologians, just as Daniel-Hughes proposes.

⁵⁰ Brandon Daniel-Hughes, *Pragmatic Inquiry and Religious Communities: Charles Peirce, Signs, and Inhabited Experiments* (Cham: Springer International Publishing, 2018).

⁵¹ Sheldrake, *Science and Spiritual Practices*, 82.

⁵² Noah Charney, *These Trees Tell a Story: The Art of Reading Landscapes* (New Haven, CT: Yale University Press, 2023); Yale University Press, Episode 111, “The Art of Reading Landscapes with Noah Charney.” Accessed September 13, 2023. <https://yalebooks.yale.edu/2023/05/23/the-art-of-reading-landscapes-with-noah-charney/>.

⁵³ Ursula Goodenough, *The Sacred Depths of Nature: How Life Has Emerged and Evolved*, 2nd ed. (Oxford: Oxford University Press, 2023), 212.

⁵⁴ Peirce, *The Collected Papers*, 6.467.

The sense of an ending: a new teleology

Most scholarship on Aquinas and animals focuses on the ethical imperatives that arise from it.⁵⁵ Eco-theological scholars are beginning to widen their lens, however, to consider what he has to say about nonhuman animals in themselves, and in philosophical dialog with humanity.⁵⁶ Aquinas is by no means an eco-theologian, but nor are his valuable nonmodern views of nature a simple matter of subject-object (human-animal) relations within nature. Animals, by virtue of their absence of rationality, are not in God's image but nonetheless carry a "trace" of God.⁵⁷ The multifariousness of species is central to their purpose, too: "For goodness, which in God is simple and uniform, in creatures is manifold and divided and hence the whole universe together participates [in] the divine goodness more perfectly, and represents it better than any single creature whatever."⁵⁸ Thus although Aquinas permits the killing of individual animals, there is reason to believe that he would have looked extremely dimly upon ecocide. Ecocide threatens to efface the collected and patterned set of God's traces.

Aquinas has some thoughts on meaning-making between humans and other created species, holding open the possibility for meaningful communication between species that is impenetrable to human cognition. The prompt for this reflection, just as it is so often for the new natural theologians, is plants. Aquinas is troubled that plants form a curse for humanity in Genesis 3:17. If plants are a curse, how can they be good, as God judged everything to be at the completion of creation? Aquinas' answer concerns meaning. These troublesome words have accursedness conferred as an additional meaning (cursing) that speaks to humans only, leaving open the sense that plants and animals may share significances and "speak" meanings among themselves—the thistle's call to the bee, for example.⁵⁹ Aquinas deals with a similar problem concerning animals: Surely God did not make creatures injurious to humans on the sixth day? In response, Aquinas quotes an analogy from Augustine about how tools in a workshop can be dangerous in the wrong hands. Humans have, post-fall, lost the meaning and understanding of these creatures in and of their created order.⁶⁰ The implication is that there was and is a natural system of meaning that does not depend upon humans for its semiotic anchor.

Aquinas also grants animals the power of meaning-making, a mental activity that combines perception and memory. This moves us from the possibility of animals' meaning-making to a definite statement that it occurs. "Now we must observe that for the life of a perfect animal, the animal should apprehend a thing not only at the actual time of

⁵⁵ A good example is Anatoly Angelo R. Aseneta, "'Laudato Si' on Non-Human Animals," *Journal of Moral Theology* 6, no. 2 (2017): 230–45.

⁵⁶ David Grumett, "Animals in Christian Theology," *Religion Compass* 5, no. 10 (2011): 579–88.

⁵⁷ Aquinas, *Summa Theologiae* I, q. 93, a. 6. See also I, q. 72, a. 1, where Aquinas counts humans as more perfect because created directly by God rather than produced from water or land as are other forms of animal life.

⁵⁸ Aquinas, *Summa Theologiae* I, q. 47, a. 1.

⁵⁹ Aquinas, *Summa Theologiae* I, q. 69, a. 2.

⁶⁰ Aquinas, *Summa Theologiae* I, q. 72, a. 1.

sensation, but also when it is absent.”⁶¹ The deer knows the wolf even when it cannot see one. It is not quite clear whether Aquinas means the absence of the thing or the absence of the sensation. He could mean that the scent of a wolf signals “predator” to a deer even when the wolf is absent; or even more radically that the deer remembers “wolf” in the absence of even its scent and, as a result, does not, say, leave its young exposed (a stronger claim that that the deer simply has an instinct not to leave the young exposed). Either way, this is a generous account of meaning-making in animals.⁶²

Kohn’s descriptions of animal meaning-making could almost read as an elaboration of Aquinas’ brief sketch. In a pivotal passage, Kohn writes of a woolly monkey who comes to apprehend the presence of another through perception and memory of certain sounds: “The thundering crash [of a falling branch] would iconically call to mind past experiences of similar crashes [. . . and] their co-occurrence with something dangerous—say, a branch breaking or a predator approaching. [. . . T]his association is something more than a likeness. It impels the monkey to ‘guess’ that the crash must be linked to something other than itself.”⁶³ Kohn’s reference to iconic signification reflects, of course, his own, acknowledged debt to Peirce, especially Peirce’s critique of mind/matter dualism.⁶⁴ In turn, Peirce pointed back to the scholastics.⁶⁵

For the purposes of this paper, the most interesting aspect of Aquinas’ philosophy is what happens when we read through his teleology in relation to nonhumans. As is well-known, Aquinas’ philosophy of perfection consistently highlights the purpose or end (telos) of creation.⁶⁶ When applied to nonhumans, this teleological existence is described as participation in and representation of “the divine goodness.”⁶⁷ What this means is disarmingly, perhaps deceptively, simple. A perfect animal is an animal that fulfills its purpose in God—to continue to be a living animal: “Creatures [. . .] acquire their last end, in so far as they share in the Divine likeness, inasmuch as they are, or live.”⁶⁸ Thus, in fulfillment of that purpose, Aquinas writes that there is a natural law—“which nature has taught to all animals”—according to which every creature “seeks the preservation of its own being, according to its nature.”⁶⁹ It seems a plausible step to extend the preservation of an animal’s own being beyond survival to include reproduction.

Like Kohn, Aquinas keeps individual creatures very much at the forefront of his account. A good puma, for Aquinas, is one that is able to realize itself as a successful

⁶¹ Aquinas, *Summa Theologiae* I, q. 78, a. 4.

⁶² Compare Helen De Cruz, “A Taste for the Infinite: What Philosophy of Biology Can Tell Us About Religious Belief,” *Zygon* 57 (2022): 166–69.

⁶³ Eduardo Kohn, *How Forests Think: Toward an Anthropology Beyond the Human* (Berkeley, CA and Los Angeles, CA: University of California Press), 52.

⁶⁴ Kohn, *How Forests Think*, 56.

⁶⁵ Alan R. Perreiah, “Peirce’s Semeiotic and Scholastic Logic,” *Transactions of the Charles S. Peirce Society* 25, no. 1 (1989): 41–49.

⁶⁶ Aquinas, *Summa Theologiae* I, q. 73, a. 1.

⁶⁷ Aquinas, *Summa Theologiae* I, q. 22, a. 1.

⁶⁸ Aquinas, *Summa Theologiae* II(i), q. 1, a. 8.

⁶⁹ Aquinas, *Summa Theologiae* II(i), q. 94, a. 2.

instance of being a puma: something which depends also on the environmental conditions of realizing what it takes to be a puma. Despite Aquinas' tendency toward the specific, his inclusion of environmental conditions—other species—means that we get to move toward life as a realization of interwoven and interdependent teleologies. The shared center, meaning, and purpose of nonhuman beings are the drive for life.

Aquinas' treatment of life as *telos* is strikingly echoed by Kohn. In order to come to this point, however, Kohn has to throw off several hundred years' worth of intervening animal-philosophy and science antithetical to Aquinas.⁷⁰ Descartes, so the generally accepted story goes, established a conception of animals as unaware machines, and this assumption continued to underpin zoological science until at least the late twentieth century.⁷¹ Neo-Darwinian evolutionary theory accounted for animal behavior as instincts affirmed by natural selection, not consciously deployed.

Kohn's ability to sidestep this powerful paradigm is afforded by his disciplinary positioning in anthropology. Anthropologists have been at the forefront of breaking down the nature/culture, subject/object divide inherent in modern science. In its place, Eduardo Viveiros De Castro offers a framework for a "multinaturalism" in which "the world is inhabited by different sorts of subjects or persons, human and nonhuman, which apprehend reality from distinct points of view."⁷² Although this might sound like the relativism which McGrath seeks to evade in his move to "critical realism," it is nothing of the sort. The personhood of subjectivity (or spirit) is prior, and nature *actually* takes on a variety of particularities in relation to it.

Kohn's elaboration of multinaturalism, the predator/prey relationship, helps to make sense of an indigenous paradigm which is otherwise incommensurable with a European-based ontology. The same being can be either a predator or a prey depending on the moment and its location within the relational web of the forest—that is, it can take on and apprehend a variety of particularities dependent on context. Kohn's book—an anthropology of the Runa of Ecuador's Upper Amazon—opens with a warning that he was given always to sleep face-up, lest a jaguar, seeing no eyes looking back at it, mistake him for meat. From this (non)encounter unfurls a whole series of realities constituted by relational meanings.

The warning about jaguars not only introduces Kohn to his own multinatural existence but also highlights dramatically that his *telos* is to stay alive. In his chapter "the living future," Kohn thinks further with his human and nonhuman informants about "the problem of survival."⁷³ Survival can be glossed as "how to go about inhabiting a future,"⁷⁴ which returns us to the woolly monkey. In making meaning, she was constructing futures in which she did or did not jump; only in the latter would she survive. Meaning-making, considered

⁷⁰ R. Sheldrake, *Science and Spiritual Practices*, 82.

⁷¹ Amanda Rees and Charlotte Sleigh, *Human* (London: Reaktion, 2020), 23–44.

⁷² Eduardo Viveiros de Castro, "Perspectivism and Multinaturalism in Indigenous America," in *The Land Within: Indigenous Territory and The Perception of the Environment*, ed. Alexandre Surrallés and Pedro García Hierro (Copenhagen: IWGIA, 2005), 36.

⁷³ Kohn, *How Forests Think*, 47.

⁷⁴ Kohn, *How Forests Think*, 259.

within the framework of life, or survival, is necessarily teleological. Kohn's title, *How Forests Think*, highlights how this process of meaning-making is distributed across a whole ecosystem of humans, nonhuman animals, and plants. Features of meaning-making that are often reserved to humans—dreams, imagination, the capacity to see otherwise—are widely distributed within it. (Dogs, especially, are dreamers.) The power of generalization is presented not as an ability to remember but imaginatively and selectively to forget—the creation of not-ness.⁷⁵ Spirits of past and future are among the multinatural beings produced within the ecosystem. There is a great deal here for the theologian to work with.

A Neo-Darwinian biologist might be tempted to try and reduce Kohn's claims about nonhuman thoughts to a reductivist evolutionary account. Such scientists rigorously cleared their evolutionary accounts of any species' intention to survive and improve (the individual intentions rebutted by Descartes and his heirs). There is, they argued, no purposive directionality or progress in evolution's paths. Species do not become "better adapted" in any intentional sense; they simply lose members that are ill-adapted. In this philosophical light, only humans could be said to desire or attempt meaning-making and, in similar fashion, to attempt self-perpetuation. And so the Neo-Darwinian might say to Kohn: fine, everything has perceptual relations that determine survival or death (camouflage, quick reactions . . .). But where's the *meaning*? Why not just call these signals, without presuming a conscious interpreter, a subject?

Without dismissing natural selection, Kohn insists that life has special properties. "[T]houghts are alive and [. . .] that which lives thinks."⁷⁶ What makes them alive is that they pivot, like the woolly monkey's leap, around the Thomist purpose of the preservation of future-being. That is what being alive is: something on which Neo-Darwinians and new natural theologians can agree. Kohn does not simply rebut the denial of animal meaning and intention. Instead, he makes meaning integral to natural life and its systems. Selfhood, and awareness, are products of participation in the network of meaning, not something that stands ontologically apart from and before it. Kohn's is not a forest full of selves constructing and using meanings, but a forest of meanings out of which emerge selves. Following Judith Butler, he treats selfhood as emergent; it can be constituted as powerful or as prey depending on its relations. As such a self, it filters and processes further data, enhancing or changing those relations and, in turn, its selfhood: "the world beyond the human is not a meaningless one made meaningful by humans. Rather, mean-ings [sic]—means-ends relations, strivings, purposes, telos, intentions, functions and significance—emerge in a world of living thoughts beyond the human in ways that are not fully exhausted by our all-too-human attempts to define and control these."⁷⁷

In order to survive, Kohn's informants must successfully juggle the meanings of white businessmen, hungry pumas, crashing palm branches, and snoring dogs; of dreams, spirits, and forgetting. Through them, Kohn offers a rehabilitation of teleology as the very definition of life and of subjecthood that emerges through the web of meanings that facilitate the pursuit of that telos. Would Aquinas agree? Perhaps he would. Certainly, we

⁷⁵ Kohn, *How Forests Think*, 108.

⁷⁶ Kohn, *How Forests Think*, 72.

⁷⁷ Kohn, *How Forests Think*, 72.

may read Kohn's work as the academic backdrop to the crop of popular new natural theology and its less academically couched, but intuitively appealing, breakdown between subject and object.

What might seem like an abstruse academic argument about subjecthood and objecthood, life and teleology, changes abruptly when we consider its context. During the twentieth century, teleology was a despised narrative in biology.⁷⁸ Animals did not desire or attempt to evolve into certain forms; they (or their genetic puppet-masters) simply succeeded, or did not, in perpetuating themselves. Death sieved the sheep from the goats, pushing genetic sub-communities toward speciation or off the cliff of existence. Yet death remained only notional for humanity as a whole, pushed to the margins of the speakable even for self-evidently mortal individuals. Medicine lengthened the lives of the wealthy, and the dying were hidden away in hospitals. An encounter with a dead person became a rarity. The "good death" of the middle ages—contemplated in advance and during the process itself—became unthinkable.

Today, however, death fills the windscreen of our collective vision, just as it does for the Runa. Aquinas' conclusion, that the purpose or meaning of living creatures is to live, acquires fresh significance during the sixth mass extinction. In 2017, the Scripps Institute put the chances of human extinction by 2100 at 5%.⁷⁹ Although the date may be speculative, the odds of this event occurring within historical (rather than geological) time have shortened since then. Death is no longer something that pertains to—indeed, biologically defines—nonhuman animals, but something that unites them with human animals. We are at risk along with the rest of the biosphere. Indeed, we may be more at risk than, say, cockroaches and tardigrades (another organism of recent popular interest). This growing perception of ecological threat flattens our sense of human superiority. The distinction between humans as a knowing subject—whether scientist or natural theologian—and the biosphere as the object wears tissue-thin. We are waking up to the brutal awareness that talking about nature is talking about self.

The realization of extinction explains why both academic anthropology and the new natural theology of popular publishing are converging on the same insights. Professional scientist Simard credits the work with the powers of imparting wisdom, writing, "This is not a book about how we can save the trees. This is a book about how the trees might save us."⁸⁰ Her reference to "saving" indicates one major reason why science writers are shifting away from the supposed objectivity of science, and why these books are finding an eager audience. Accepting the fragility of human life and the uncertainty of its earthly continuance has provoked a questioning of scientific values as the highest expression of humanity, and an appetite for inter-species learning as an alternative. In one moving online video, Kimmerer speaks of what we can learn from mosses in their geological

⁷⁸ Midgley, *Science as Salvation*, 9–13.

⁷⁹ Robert Monroe, "New Climate Risk Classification Created to Account for Potential 'Existential' Threats." Created September 14, 2017. Accessed 22 May, 2023. <https://scripps.ucsd.edu/news/new-climate-risk-classification-created-account-potential-existential-threats>.

⁸⁰ Simard, *Finding the Mother Tree*, 6.

longevity—to live simply and humbly, limiting one’s demands upon the biosphere.⁸¹ The context for the model of learning-from-nature is nothing short of climatic and ecological collapse.

A comparison is sometimes made between ecological collapse and the cold war threat of nuclear catastrophe. Why did that not also provoke such a wide-ranging and paradigm-changing response? To answer this question would require a paper in its own right, and it is probably true that some of the Western intellectual resources for facing climate catastrophe have their roots in cold war counterculture.⁸² But there are also key differences. Nuclear war was an all-or-nothing threat, something that would either happen or not happen. It could be actively resisted; it could be definitely averted. Climate breakdown and extinction are harder to measure, more irresistible: a cancer, not a gun to the head. Because human agency could turn off as well as turn on atomic technology, the nuclear crisis did not challenge human subjecthood—if anything, it elevated it. There is a profound difference between that and the collapse of what was taken for granted via the self-destruction of climate tipping points.

Knowing theoretically about extinction and being able to live with that knowledge inside oneself are two different things. If we really understand it, it threatens to overwhelm and obliterate us. What is the meaning in living, when everything is dying?⁸³ Studies of climate scientists show that they often struggle with intense psychological anguish.⁸⁴ Ryan Hediger has characterized this anguish a form of homesickness for lost lifescapes.⁸⁵ A much-loved field becomes a housing estate. A river is polluted beyond recognition. The jungle of our childhood’s picture books is long gone. In an era of natural despoliation, alienation occurs not in spatial distancing from home but by the experience of its destruction. Glenn Albrecht has coined the term “solastalgia” for this time-based form of homesickness.⁸⁶

In response to these feelings, the new natural theology offers its readers the words that, in speaking, become familiar. Words are an embodiment of Novalis’ consoling philosophy, a salve for the “urge to be at home everywhere.” The places where we encounter them become home once more, spaces in which we and they are organisms fulfilling the Thomist telos. They knit us back into the web. They speak their meanings, making the

⁸¹ Robin Wall Kimmerer and Lucy Jones, “Robin Wall Kimmerer and Lucy Jones on Gathering Moss,” 5x15 Stories, July 28, 2021. <https://youtu.be/c3FSpMMzUNI>.

⁸² Matthias Dörries, “The Politics of Atmospheric Sciences: ‘Nuclear Winter’ and Global Climate Change,” *Osiris* 26, no. 1 (2011): 198–223.

⁸³ Robert Bringham and Jan Zwicky, *Learning to Die: Wisdom in the Age of Climate Crisis* (Regina, SK, Canada: University of Regina Press, 2018); Trebbe Johnson, *Radical Joy for Hard Times: Finding Meaning and Making Beauty in Earth’s Broken Places* (Berkeley, CA: North Atlantic Books, 2018).

⁸⁴ Joe Duggan, Neal R. Haddaway, and Nicholas Badullovich, “Climate Emotions: It Is OK to Feel The Way You Do,” *The Lancet Planetary Health* 5, no. 12 (2021): e854–e855.

⁸⁵ Ryan Hediger, *Homesickness: Of Trauma and the Longing for Place in a Changing Environment* (Minneapolis, MN: Minnesota University Press, 2019).

⁸⁶ Glenn A. Albrecht, *Earth Emotions: New Words for a New World* (Ithaca, NY: Cornell University Press, 2019), x.

cosmos legible along with one's place within it. Simply in speaking, they create meaning. They whisper: *may you be at home*.

Conclusion

The recent harvest of texts on worts—trees, fungi, lichens, and so on—may be considered as a kind of new natural theology. Many readers and viewers are open to overtly spiritual accounts of the meanings implicit in their scientific findings. On a simple and intuitive level, the corpus continues the work of natural theology in asking about the meaning of nature. Meaning here appears in both its technical sense of semiosis and in the everyday philosophical sense of purpose or the “big questions” (the “meaning of life”). In fact, the oeuvre's special accomplishment is to show that meaning in the second, bigger sense, is satisfied by meaning in the first sense. To be alive is to be woven into the web of interspecies signification.

I have argued that the popular new natural theology shares this insight with contemporary anthropology. Eduardo Kohn, in particular, articulates a version of meaning-making that can function as a philosophical rooting of more popular accounts. Specific and abstract modes of human meaning-making do not render obsolete the kind that is shared with all other species; in fact, it is needed more than ever.

Kohn's account—or the accounts of his forest informants—is especially interesting in the way that it revives Aquinas' focus on teleology, something that was written out of natural theology as it attempted to conform itself with science. There is certainly scope here for further exploration of Thomist teaching. For writers and readers of popular natural theology, the reintroduction of purpose as inherent to life has been made possible by the brutal realization of imminent death for *Homo sapiens*. A natural thing that applied to the animal “other” now applies to human animals too. It turns out that humans' goal is to seek life in the same way as do pumas and woodlice, or as did dodos and woolly mammoths. Death, which was an object in evolutionary accounts (the motor of natural selection), has become a condition of the subject, of the scientist along with all other humans.

Correlatively, the life-telos, which was denied scientific status among nonhuman animals, once again becomes thinkable. The denial of the life-telos in nonhuman animals was part and parcel of the reservation of subjecthood for the human investigator alone. A creature that yearns to live must be regarded as a thinking subject; without it, it can be reduced to scientific or theological object. In the face of the present crisis, mass extinction flattens out the experience of humans and other animals. Life with purpose, or the will to live, is no longer denied to the animal “other,” for it is no longer other in this respect.

The recent corpus of new natural history responds to both aspects of subject/object disruption presented by mass extinction. Its books and films are, on the one hand, public presentations of science that shun the pretense of objectivity or the view from nowhere, and on the other, they grant interlocutory powers to their nonhuman subjects, the worts. In short, they constitute an immersive ontology that rejects the subject-object relationship central to traditional modern science as well as traditional natural theology. In rejecting this dualism, they may again be considered as a new form of natural theology.

Now that we are faced with the same fate as our former scientific objects, we need to know what the worts are telling us in order to live.

All *worts*—taken figuratively as any and all beings springing forth in the world—bring *words*, or meaning. The worts are nature giving meaning unto itself, in which humans are included—but for which they do not form the semiotic anchor. The worts do not speak a naive argument for the availability of pre-lapsarian knowledge but offer responsible and responsory knowledge made in the shadow of extinction, under which teleology is reclaimed as an urgent pivot-point for meaning—perhaps, even, blessing.

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