

Exoplanets and Astrotheology

with Andreas Losch, "Astrotheology: Exoplanets, Christian Concerns, and Human Hopes"; David Wilkinson, "Searching for Another Earth: The Recent History of the Discovery of Exoplanets"; Michael J. Crowe, "William Whewell, the Plurality of Worlds, and the Modern Solar System"; David Dunér, "Swedenborg and the Plurality of Worlds: Astrotheology in the Eighteenth Century"; Ted Peters, "Astrobiology and Astrochristology"; Howard Smith, "Alone in the Universe"; and Lucas John Mix, "Life-Value Narratives and the Impact of Astrobiology on Christian Ethics."

LIFE-VALUE NARRATIVES AND THE IMPACT OF ASTROBIOLOGY ON CHRISTIAN ETHICS

by Lucas John Mix

Abstract. "Pale Blue Dot" and "Anthropocene" are common tropes in astrobiology and often appear in ethical arguments. Both support a decentering of human life relative to biological life in terms of value. This article introduces a typology of life-value narratives: hierarchical narratives with human life above other life and holistic narratives with human life among other life. Astrobiology, through the two tropes, supports holistic narratives, but this should not be viewed as opposed to Christianity. Rather, Christian scriptures provide seeds of both hierarchical and holistic narratives, each of which may flourish in different environments. By attending to which aspects of human life are valued—or disvalued—relative to biological life, we can better understand how life-concepts do work in ethics, anthropology, and soteriology in secular as well as theological contexts.

Keywords: astrobiology; bioethics; biology; environment; ethics; theological anthropology

Astrobiology does not decenter humanity. Popular press about astrobiology suggests that we, for the first time in human history, can apply science to age-old questions of meaning and purpose, but this distorts both the theological and scientific realities. Theologically, Christianity has been in dialogue with observations of the world for millennia and draws on multiple life-value narratives found in scriptures. Scientifically, the very concept of "centering" requires evaluative claims alien to objective research. Astrobiology does provide greater perspective into the way humanity relates

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to other species. In so doing, it provides a context and ground of experience in which less anthropocentric ethical narratives can grow.

Arthur C. Clarke once said, “Either we are alone in the universe or we are not. Both are equally terrifying.” So, let me begin by saying I wish to address the current state of astrobiological science, which has not yet found alien life. It is not the prospect of discovering life that interests me, but the way we go about looking for it—and the rhetoric that arises from the search. The joke has frequently been made that astrobiology is the only field of science without a subject matter. Nothing could be farther from the truth. In my book *Life in Space: Astrobiology for Everyone*, I set forth astrobiology as the study of life as it happens to planets. This includes vast swaths of research about the commonality and diversity of life on Earth, its history from a planetary perspective, and the conditions on other planets that lead us to believe life could happen there as well. I hope to reground discussion of astrobiology and life-value narratives in scriptural exegesis and contemporary science, avoiding both hyperbole and speculation.

Advances in technology and exploration can reshape our pictures of the cosmos. Freud famously claimed that science had dealt three great blows to our self-image: the decentering of our planet by Copernicus, the decentering of our species by Darwin, and the decentering of the ego by psychoanalysts (Freud 1920, 246–47). The claim is so popular that it has been commented on extensively. It was inspired by Emil du Bois-Reymond (1883) and popularized by Stephen Jay Gould (1994). Some environmentalists hope that astrobiology will similarly decenter humanity, or perhaps reinforce our understanding of humans as peripheral to the laws of the universe. Let us set aside for the moment whether or not it is true that humans have been decentered by science and ask whether it is possible. Claims about the influence of astrobiology on ethics will require some methodology—if not an instruction manual for deductive reasoning, then a travelogue for the journey from natural science to moral reasoning. David Hume ([1739] 1888, 469–70) suggested a divide between “is” and “ought” such that we must plant normative seeds in order to harvest normative fruits. I subscribe to this divided perspective, but also believe that the soil matters. Different trees grow in different locales, so we may admit that the empirical ground affects our morality, even though it does not fully determine it. I want to look more closely, then, at the work being done in the empirical ground, the seed being planted, and the fruit borne.

THE VIEW FROM SPACE

When looking at astrobiology and ethics, two sentiments have become so common that we may now call them tropes. First, astrobiology has given us an outsider’s perspective which renders all of Earth one, all humans siblings, and humanity quite literally in the same boat with all the other

species. Let us call this the Pale Blue Dot Trope. Seeing the Earth from space makes us realize its unity and fragility. Second, astrobiology has made us appreciate the profound impact humans have on the planet. We have come to dominate the planet in a way that affects the atmosphere, hydrosphere, biosphere, and even chemical cycling in the crust. A new geological epoch has been proposed, the Anthropocene, to reflect the age when humanity became a geologic force to be reckoned with. Let us call this the Anthropocene Trope. Humans now have an unprecedented power to change the world.

The Pale Blue Dot Trope can be traced to a quote from Carl Sagan. On February 14, 1990, the *Voyager 1* spacecraft took a picture of the Earth from roughly six billion kilometers out. It appears as a tiny speck amidst the darkness. Sagan reflects on that speck as follows:

Our posturings, our imagined self-importance, the delusion that we have some privileged position in the universe, are challenged by this point of pale light. Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity—in all this vastness—there is no hint that help will come from elsewhere to save us from ourselves. . . . There is perhaps no better demonstration of the folly of human conceits than this distant image of our tiny world. To me, it underscores our responsibility to deal more kindly with one another and to preserve and cherish the pale blue dot, the only home we've ever known. (Sagan 1997, 7)

More than many subsequent authors, Sagan wraps in evaluative ideas about humans: we are less important than we thought we were; external, meaning supernatural, constraints on ethics are inappropriate; and a proper understanding of our place in space provides a new foundation for ethics. Similar claims had been made before. The photo “Earthrise,” for example, shows the Earth rising over the lunar horizon in 1968. That view and the view from the space shuttle inspired comments about the insignificance of human differences over country, religion, and ideology. The metaphor of “Spaceship Earth” was also popular in the late twentieth century.

While astronomers were attending to *Voyager 1*, biologists were starting to take integrated systems more seriously on Earth. The feedback loops and systems of cybernetics were applied to ecology and James Lovelock (1972) proposed the Gaia Hypothesis. Originally, this simply posited the idea of Gaia as a single organism that evolved in tandem with the physical components of Earth and had forms of global self-regulation. Some properties of the biosphere are best viewed globally. In many ways, this idea is no longer controversial. As the concept of Gaia developed, however, the image of Gaia as person, mother, victim, and/or moral agent crept in. It is in this light that the theory became controversial. In particular, the metaphor of biosphere as organism ran afoul of a move toward the “organism as vehicle for selfish replicators” metaphor in biology. If we do not see it as competing with something else, how can it be an “organism”?

The idea of Gaia has gained traction again in recent years with a clearer understanding of symbiosis and the discovery of discrete bio-geo-chemical feedback mechanisms (Lovelock 2003). Nonetheless, the Gaia concept can become problematically value-laden. “What if Mary is another name for Gaia? Then her capacity for virgin birth is no miracle or parthenogenetic aberration; it is a role of Gaia since life began On Earth she is the source of life everlasting and is alive now; she gave birth to humankind and we are part of her” (Lovelock 1988, 206). Lovelock is being poetic, but the replacement of ecological for Christian foundations is clear. As is Lovelock’s perception that space-age biology was necessary for this ecological perspective.

The Anthropocene Trope takes for granted the fragile systemic nature of life on Earth, though rarely does it come packaged with the explicit religious valences of Sagan or Lovelock. It emphasizes humanity as agent, rather than the Earth or the biosphere as patient. Paul Crutzen and others have proposed a new geological epoch called the Anthropocene. It covers the time when humans have had an impact on global geologic processes rivalling the magnitude of natural forces such as erosion or glaciation (Crutzen 2002; Steffen et al. 2011; Monastersky 2015). Different proposals have been made for a start date, typically ranging from 1800 to 1950 and emphasizing industrialization, germ theory, global use of fossil fuels, and atomic energy. Humans are now altering geochemical cycles and driving a major extinction event. Particularly in the context of astrobiology, focus on the Anthropocene highlights human power in our new ability to peer into the depths of space, send robots to other planets, and delve into the very meaning of life. It emphasizes the role of humans as a global force and sets us apart from other life—often with the expressed purpose of suggesting moral agency in environmental questions. A recent article in *Nature* emphasizes these value commitments, when reporting anonymous scientific concerns about the proposed epoch.

[C]ritics worry that important arguments against the proposal have been drowned out by popular enthusiasm, driven in part by environmentally minded researchers who want to highlight how destructive humans have become. Some supporters of the Anthropocene idea have even been likened to zealots. “There’s a similarity to certain religious groups who are extremely keen on their religion — to the extent that they think everybody who doesn’t practice their religion is some kind of barbarian,” says one geologist who asked not to be named. (Monastersky 2015, 145)

This advocacy may be related to a trend in environmental thought contrasting modern scientific and traditional Christian cosmologies with regard to the rights and responsibilities of humans vis-à-vis nature. The type case of this move may be Lynn White’s 1967 article in *Science*, in which he says Christianity “not only established a dualism of man and nature but

also insisted that it is God's will that man exploit nature for his proper ends" (White 1967, 1205). White, admittedly, sees modern science as historically dependent on and aligned with a "Baconian creed" of human dominion. It is his identification of that creed with traditional Christianity—despite his recognition of Franciscan spirituality as a prominent alternative—that promotes a caricature of Christian theology that can be set in opposition to ecological or astrobiological insights. Equally, Carolyn Merchant's 1980 book *The Death of Nature* and subsequent ecofeminist approaches highlight problematic analogies between male/female, ruler/ruled, and culture/nature in Western culture. Doctrines of human exceptionalism drive anthropocentric consumption of environmental resources. Modern science in general and astrobiology in particular are viewed as revealing truths that will overturn Christian anthropocentrism and the doctrine of human dominion over nature. The fundamental interconnectedness of humans within the tree of life, our dependence upon ecological networks, and the delicate feedback loops of bio-geo-chemical cycles have all been invoked as decentering humans in our worldview.

The mythical myth of human centrality. Many assume that human centrality is both the default assumption of humans and the historical norm in philosophy and theology. Howard Smith (Smith 2016, XXX) states, without reference, "It used to be thought, until science proved otherwise, that we are the center of the universe and everything orbited around us." The position has been repeated often enough that it is accepted as truth, but it does not hold up under history. In *De Rerum Natura*, Lucretius imagines a flat Earth falling through infinite space. Plato imagines a spherical world, with Tartarus in the center (or at least at the deepest point worth mentioning) and humans on a shell below the atmosphere (*Phaedo*). It is this picture that will be accepted in Medieval Christian culture, with punishment at the center of the universe. In *The Divine Comedy*, Dante Alighieri places Lucifer face down in the center of the terrestrial sphere, with his head toward the human hemisphere and his feet toward purgatory, having fallen headfirst into Hell. Lewis (1994) pointedly remarks that this places us on the skin of the celestial trash heap, rather than at the center of the universe. The idea that humans are central arises with Enlightenment humanism, and not with Christianity or the Middle Ages.

In a similar vein, one can note that a universe is neither large nor small, empty nor full empirically. These are either comparative statements—and we have nothing to compare the universe to—or emotive statements—in which case science has not added anything new (cf. Chesterton 1908, 113). Humans may fill up a smaller fraction of the total volume, but we were miniscule even in the smallest historical models of the cosmos, certainly in antique and medieval Christian pictures.

Contemporary science. In many ways I agree with the insights captured by the Pale Blue Dot and Anthropocene Tropes. Modern astrobiology—including astronomy, biology, geology, and so on—tells us important things about the cosmos that should impact our ethics. We have a greater understanding of human interconnectedness with nature than we ever had before. We understand both the family tree of life on Earth and the many ways that genetic information crossed between branches (Petrov et al. 2014; Doolittle 1999). Humans are not only related to, but closely and dynamically integrated with, other organisms. The discovery of thousands of extrasolar planets and countless “extremophiles” has given us good reason to reassess notions of humanity as central or even middle-of-the-road (“mesophilic”) when it comes to planetary sciences and biology (Mix 2009, 67–69; Heller and Armstrong 2014; Preston and Dartnell 2014). The search for life itself highlights a uniqueness of humanity, regardless of what we find, for we are the species that makes this sort of inquiry; our vision and our technology reach beyond the solar system (Borovikov and Pogorelov 2014). To the extent that the two tropes reflect scientific advancement and contemporary knowledge—the soil in which ethics grows—it seems fair to say that they are more conducive to those evaluative and normative systems in which humans are influential but not independent, in which biological and geological nature plays a significant role in human flourishing, and which will countenance a vast universe beyond human familiarity.

Seeds of normativity. The question we must ask is this: What seeds does Christianity attempt to plant in this soil? The doctrine of dominion has been questioned repeatedly in ethics and scriptural interpretation, often contrasted with a doctrine of stewardship. Christian theology has explored a wide variety of narrative frameworks, including several major narratives about the value of life. Two types of life-value narratives have recurred in Jewish and Christian thought over the last three millennia, each positioning human life, biological life, and nonlife in relation to a spectrum of value. Each tells a historical story about the cosmos.

Hierarchical narratives view biological life arising from nonlife and human life arising from biological life as a ladder or pyramid. So called “higher” life is better, further along, or worth more than lower life; therefore, exchanges can and should be made to advance the greater by sacrificing the lesser. The most familiar of the life-value narratives invokes a ladder or *scala naturae*, stretching from base Earth, through more and more elevated organisms to peak at humanity or, occasionally, some even higher end. Though value always attaches to the “higher” organisms, the specifics of high and low vary considerably. In Aristotle, higher refers to more faculties. Humans have a rational faculty in addition to sensation—shared by all animals—and nutrition and reproduction—shared by all living things. The faculties stack on top of one another with reason—the human

faculty—at the top. Medieval European authors compared the natural world to a kingdom, with many peasants, few courtiers, even fewer nobles, and only one king. The physical world, likewise had many plants, few animals, and even fewer humans, with one God as king.

The hierarchy embraces both progressive and contrastive hierarchies. Progressive thinking after the Enlightenment might be better compared to an escalator than a ladder, for the lower stages were viewed as intermediates on the way toward higher stages. This escalator of evolution can be seen clearly in the work of Jean-Baptiste Lamarck, Herbert Spencer, and others, though it is inimical to modern evolutionary thought in biology (Ruse 2009). We still speak of higher and lower organisms, usually referring to size, specialization, or complexity. Immanuel Kant and Emanuel Swedenborg both give us astrobiological hierarchies, as set forth in Dunér (this volume). Pierre Teilhard de Chardin (1969) ties this progressive narrative explicitly into Christianity, with the universe evolving as a whole from physical properties to living biosphere and eventually intellectual “noosphere.” Karl Barth explicitly rejects this as Gnosticism (Letter to G. Casilas quoted in Busch 1994, 487), suggesting that creation and redemption are independent acts of God with Christ breaking into the Fallen creation through humanity (Barth 2009, IV.3.1 131–2). He contrasts the old creation, exemplified in our continuity with the physical world, and the new creation, exemplified in Jesus Christ in which we participate by faith. These opposed theological narratives share a concern with the elevated value of human life relative to biological life.

Holistic narratives refuse to privilege human life over biological life at large. We are important to ourselves, and thus specially positioned in our ethical considerations, but neither the universe nor God values us over our fellow creatures. Human life is one among many trajectories within this greater whole. Its value arises from its contribution to the common good, but when human interests and the interests of biological life diverge it becomes a force for evil. There is no higher and lower life, only life. This holism embraces both a romantic narrative and an existential one. Thomas Aquinas, for instance, emphasizes the role of human will in moving us away from the natural law, to which animals default (Renick 2002, 57–58). The world was corrupted by Adam’s sin and other creatures are subject to that brokenness, but they do not add to it as humans do. Such a romantic picture contrasts nature and artifice, with evil arising only through artifice. (Note this is potentially angelic artifice, but never nonhuman animal agency). This frequently appears in free will responses to theodicy. Existential narratives, on the other hand, view nonlife as the default with biological life arising as a contingent and fragile blossom amidst the concrete. It has value, perhaps the only value, but it is at odds with the underlying laws of the cosmos. Nonlife will win in the end and the only value to be found will be in the ultimately futile struggle against

the darkness. Human life is valued for its intensity and ability to actively fight the darkness, but it is neither better nor worse than other life, and it must, with all things, eventually succumb. Both romantic and existential approaches agree in their restrained take on human value.

These two life-value narratives are neither comprehensive nor exclusive. They nonetheless reveal very strong conceptual frames within our scientific, ethical, and theological cosmologies. Often one tale is told with the plot driven by tension between hierarchical and holistic narratives. For example, Francis Bacon speaks of our decline from the Fall—a romantic narrative—but also of our recovery through science and religion—a progressive narrative (*Novum Organon* II.52). Carolyn Merchant (1995) speaks about similar recovery narratives informing United States history. These stories should inspire us to ask where the inflection point is, what aspects of humanity are still fallen, and what aspects allow for our return. One might even argue that this inflection is central to any Christian concept of *metanoia* or repentance, though life-value narratives are only one screen on which this drama has been projected. No one paper would be sufficient to explore the alternatives throughout Christian theology. Here I can only point out the attempted move in astrobiology and ethics, identify the narratives at play, and compare them with a few examples from the Bible.

The Pale Blue Dot and Anthropocene Tropes are regularly invoked to support holistic narratives over hierarchical narratives, with Christian theology set up as the opposition. In response, I want to query the Christian scriptures to see if there is indeed a preponderance of hierarchical approaches. Reflection shows that the Bible plants seeds of both holistic and hierarchical life-value narratives.

SCRIPTURAL WITNESS

Hierarchical life-value narratives appear throughout the Bible, though the most famous passage is in Genesis 1. The sequence of creation is significant, with God making first the light (day 1), waters and heavens (day 2), and Earth (day 3), then the creatures of light (day 4), waters and heavens (day 5), and Earth (day 6). Finally, God creates humans in God's image and likeness (Smith 2010, 89). This structure in sacred time mirrors the sacred structure of the Temple, proceeding from the profane world to the Holy of Holies, as it proceeds from the first breath to the Sabbath (Brown 2010, 36–44). Humans not only stand in the congregation, but serve as the high priest and image of God, an image which may not be made in any other way. In Genesis 1, the plants are placed as part of the landscape; they exist for the sake of the inhabitants, rather than being inhabitants themselves. Plants are for the sake of animals; and humans, among the animals, stand closest to God. Human precedence is most explicit in verse

28: “God blessed them, and God said to them, ‘Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth.’” (Bible quotes are taken from the New Revised Standard Version.) The idea of animal sacrifice is countenanced by Abel’s offering to God (Genesis 4:4). Still, animals are not presented as human food until the Noachic covenant, when God expressly places animals below humans on the hierarchy. “Every moving thing that lives shall be food for you; and just as I gave you the green plants, I give you everything” (Genesis 9:3). This need not be interpreted opportunistically. I will leave it to others to debate whether this dominion should be viewed imperially or with *noblesse oblige*. James Gustafson provides an excellent analysis that explores more and less privileged positions for humanity in scripture (1994, 77–110). In any case, the precedent has been set for a hierarchical world in which sacrifice of lesser for greater is not only acceptable but appropriate to the God-given order.

This order is reaffirmed in Psalm 8. “When I look at your heavens, the work of your fingers, the moon and the stars that you have established; what are human beings that you are mindful of them, mortals that you care for them? Yet you have made them a little lower than God, and crowned them with glory and honor. You have given them dominion over the works of your hands; you have put all things under their feet” (Psalm 8:3–6). It is, however, challenged in the book of Job. “What are human beings, that you make so much of them, that you set your mind on them, visit them every morning, test them every moment? Will you not look away from me for a while, let me alone until I swallow my spittle?” (Job 7:17–19). Likewise, Psalm 144 calls us to question the human position. “O Lord, what are human beings that you regard them, or mortals that you think of them? They are like a breath; their days are like a passing shadow” (Psalm 144:3–4). Job and Psalm 144 provide an explicit critique of the Psalm 8 hierarchy.

In the second creation story, God makes humans as tenant gardeners, rather than priests or rulers. “The Lord God took the man and put him in the garden of Eden to till it and keep it” (Genesis 2:15). Instead of emphasizing human likeness to God, the author highlights the continuity of ground (*adamah*) and the “groundling” (*adam*) (Genesis 2:7). Once again the plants are given as food, but not the animals, who are to be helpers and partners. In this story, however, and in the chapters to follow, humanity becomes a curse upon all other life, causing strife between species (Genesis 3:15) and within families (3:16). Even the plants have become armed (3:18) and God steps in to sacrifice an animal for the sake of the humans by crafting garments from animal skin (3:21). For the next three chapters, humanity wreaks havoc with creation. Cain kills his brother (4:8), alienating himself not only from the animals, but from the soil and, by

extension, the plants. “And now you are cursed from the ground, which has opened its mouth to receive your brother’s blood from your hand. When you till the ground it will no longer yield to your strength” (4:11–12a). Humankind becomes so wicked that even the angels are drawn into the strife and God decides to blot out humanity and all the animals—though notably not the plants and angels (6:1–7). God had prevented humans from living forever (3:22) but does not set the span of human life until this time (6:3). Throughout Genesis, the biological lifetime of humans gets shorter and shorter demonstrating the corrupting effect of humanity. Here the uniqueness of humanity, be it willful disobedience or some faculty gained by eating the fruit of the tree of knowledge of good and evil, stands in opposition to the goodness of biological life—we are a corrupting influence.

Throughout the Hebrew scriptures, it is easier to see a narrative of human wickedness with occasional flashes of inspired greatness than it is to see the opposite. By Noah, God saves humans and animals (Genesis 6–9), but the world is not the same. The Noahic covenant allows humans to eat the animals and Noah soon discovers wine and drunkenness (9:20–21). By Abraham, God creates a nation (Genesis 17), but the story comes amidst war, corruption, and strife between members of Abraham’s family. By Moses, God rescues the people from Egypt (Exodus), but the people, including Moses, doubt God’s power and goodness and turn against one another. There is almost no reflection on similar disharmony in nonhuman nature. Instead, biological nature is used repeatedly to emphasize the glory of God and the relative unimportance of humanity. God is at work in diverse ways much more in line with the romantic life-value narrative. David Kelsey looks particularly to the Wisdom literature for a creation theology markedly less human focused than even the second Genesis account (Kelsey 2009, 176–89).

In the book of Job, Elihu suggests Job submit to God’s great power, using meteorological metaphors (Job 35–37), but God takes a different tack. God argues that Job is unaware of all of God’s purposes, using biological as well as meteorological metaphors (38–41). God made places humans cannot go and does things humans cannot understand. Chapter 39 is devoted to examples of God’s relationship with other animals that have nothing to do with humanity. Chapter 40:15–24 addresses the animal Behemoth, “which I made just as I made you” and for whom “the mountains yield food.” Chapter 41 addresses Leviathan, explicitly spelling out that it is not human food (41:1), livestock (41:2), supplicant (41:3), servant (41:4), pet (41:5), commodity (41:6), or thrall (41:7). “On earth it has no equal, a creature without fear. It surveys everything that is lofty; it is king over all that are proud” (41:33–34). In other words, Leviathan is not subject to humanity, but humanity may be subject to Leviathan. This is not an argument for God’s power, but for God’s concern with things beyond humanity. Psalm

104 similarly presents humans as one of the many species God cares for. Grass feeds the cattle who feed humans (104:14) and streams water the cedars that house the birds (104:16–17). Even Leviathan is mentioned (104:14).

Next, we turn to the existential life-value narrative. “Throughout most of the Hebrew Bible, the destiny of life is death, the final, natural phase of life” (Brown 2014, 531). In this, humans are no different from any other creature. The narrative is clearly stated, though perhaps not endorsed when Job says, “For there is hope for a tree, if it is cut down, that it will sprout again, and that its shoots will not cease. Though its root grows old in the earth, and its stump dies in the ground, yet at the scent of water it will bud and put forth branches like a young plant. But mortals die, and are laid low; humans expire, and where are they?” (Job 14:7–10). Biological life, represented in the tree, will continue, but human life is fleeting.

The same theme pervades Ecclesiastes, which reiterates themes of continuity between the ground, animals, and humans. “For the fate of humans and the fate of animals is the same; as one dies, so dies the other” (Ecclesiastes 3:19). Even the life we share with the rest of creation is fleeting and eventually subject to death: “. . . all must go to their eternal home . . . and the dust returns to the earth as it was, and the breath returns to God who gave it. Vanity of vanities, says the Teacher; all is vanity.” (Ecclesiastes 12:5–8). The existential narrative also appears clearly in Genesis 3:19 and Isaiah 40:6–8.

These books do not negate the passages in Genesis 1 and Psalm 8, but they do place them in context. Various life-value narratives appear in the Hebrew Scriptures and nothing suggests that these two defenses of hierarchy should override the romanticism and existentialism so strongly articulated elsewhere. Neither does the New Testament provide us with much support for any of the narratives. We can only make indirect arguments in terms of favoritism, dualism, and eschatology.

First, an argument can be made that God favors humans above other forms of life. Jesus claims that humans are of more import to God than the lilies and the ravens (Matthew 6:25–30; Luke 12:24–28). This clearly emphasizes a hierarchy, though it is only one anecdote.

Second, Paul’s emphasis on spirit over flesh (e.g., Romans 7–8; I Corinthians 15; Galations 4–6) might be read as a triumph of soul—as human life—over body—as biological life. This, however, seems more in line with Platonic distinctions between appetitive souls (in all life) and rational souls (in humans) than with the Hebrew Scriptures. In the latter, the Holy Spirit or divine breath enlivens the world and all animals. Humans do not have a monopoly on either spirit (Genesis 7:22) or soul (Genesis 1:24). Thus a hierarchical interpretation will insist that humans are more inspired than animals, but not that biological life is uninspired. We may read Paul in light of Plato, but need not. It may even be undesirable to do

so (Kelsey 2009, 31). It seems more straightforward, and more in line with Hebrew Scriptures, to interpret this as a triumph of spirit—as all life—over flesh—as dust or matter.

To move from a romantic or existential narrative to a hierarchical one, we will need to introduce some notion that humans have more life and spirit than other animals. Indeed, this will be a popular move in Christianity from at least the fifteenth century, to overlay progressive human history on a more static biological world and see humans as uniquely instrumental in the redemption of creation. Such a move, though, almost necessarily entails the eventual redemption of nonhuman biological life through human activity (e.g., Luke 3:6). Thus humans have status as forerunners, but not as perpetually superior. As to Jesus being born human, thus privileging humanity: it strikes me that a religion devoted to the idea of Jesus being born in a backwater to undistinguished parents should be comfortable with him being born to an undistinguished species. Ted Peters (Peters 2016, this issue) rightly distinguishes between geocentrism and “homocentrism” (anthropocentrism) on one hand and Christocentrism on the other. Christians can have the latter without the former. Indeed they must, to the same extent they wish to move away from Jewish or masculine identity as key to salvation. It may even be valuable to overlook some contingent aspects of Christ’s incarnation when claiming the universality of his new creation. These aspects speak to the mechanism of salvation, but not necessarily its end.

Finally, one might make an eschatological argument for human superiority. Only humans are mentioned in the heavenly city of Revelation (with the exclusion of two trees) and only humans are mentioned in accounts of resurrection. To this I would respond with two observations. First, Isaiah (11:6–9) appears to be a second account of the new creation, defined by relationships between nonhuman animals. Second, the whole of creation is to be remade, a new heavens and a new earth (Revelation 21:1; 2 Corinthians 5:16–17), from which we might infer the presence of plants and animals.

Indeed, the resurrection recalls another example of the existential narrative: “. . . the creation was subjected to futility, not of its own will but by the will of the one who subjected it, in hope that the creation itself will be set free from its bondage to decay and will obtain the freedom of the glory of the children of God. We know that the whole creation has been groaning in labor pains until now; and not only the creation, but we ourselves, who have the first fruits of the Spirit, groan inwardly while we wait for adoption, the redemption of our bodies” (Romans 8: 19–23). The hierarchy comes about temporally as God works in the spirit through humanity to bring about the redemption of the world. An existential narrative—a futile narrative of both biological and human life—is contrasted with a progressive narrative, wherein humans precede the rest of creation. This

tension between what has fallen and what is being redeemed will play out in our anthropology and our conception of what it means for humans to have power in the world.

WHAT ARE HUMAN BEINGS?

Returning to the original metaphor of this article, two kinds of Christian narratives have been planted in the soil of human experience: hierarchical narratives of progress and contrast and holistic narratives of romanticism and existentialism. Which will take root? Our ethical systems grow from such seeds, but astrobiology has conditioned the soil, making it more likely to sprout holistic ethics. I want to reaffirm this effect of the science, while clearly articulating the variety of Christian seeds—at least from a Biblical perspective. Further, I think it worth asking what soil these seeds were planted in over the last few centuries that caused so many hierarchical plants to grow.

More pointedly, I would like to ask how we might apply both kinds of narratives at the same time. The New Testament challenges us to look for God's action specifically in humans and typically in Jesus Christ. Human exceptionalism comes to the forefront. If humans enjoy unique value in God's eyes, what aspects of our humanity account for this? We can ask by what traits or faculties God acts through humanity to bring about the new creation? By what traits or faculties do we resist? Our role as saviors or defilers rests on such distinctions. Neither can they be separated from our anthropology (understanding of humanity) or soteriology (understanding of salvation). Benedict XVI (2007), quoting Gregory of Nazianzus, has said, "What has not been assumed has not been healed." The incarnation must be comprehensive, with Christ fully human, so that redemption may also be comprehensive (see also Hebrews 2). Other theologians set the parts against one another. If our human uniqueness is in our intellect and our intellect opposes our appetite, then the appetite must be diabolical. Alternatively, if God acts through our will in opposition to our reason, then the reason becomes a stumbling block. For such thinkers, the elevation of one aspect of life, or of human life, requires us to lower another aspect.

In speaking of humans in the astrobiological context, we must be careful that we know when we are being simply descriptive—humans use tools—when we are being definitive—humans are the tool-using animal—and when we are being evaluative—tool use makes us "higher organisms." Aristotle, in calling humans "rational animals," not only attributes a faculty for reason, but also claims that faculty sets us apart from other animals and that our highest good—if not the highest good—lies in our exercise of that faculty. The most recent geological epoch, the Holocene, dates from the beginnings of human agriculture ~12,000 years ago. Some have argued that the entire epoch should be renamed the Anthropocene because of

this human impact on our environment. Notably, there is little call for a Formipocene, despite the discovery that ants have been cultivating fungus for tens of millions of years (Shultz and Brady 2008). Most discussion of the the Anthropocene has focused on more recent human traits, such as nuclear waste production and space exploration, which leave a larger geologic footprint. Nonetheless, these questions challenge us to ask which human traits are important and which, if any, “lift us up” from nature. Even the term “nature” in this sense privileges humanity in contrast to all other species.

I have only had time here to discuss a few prominent Biblical themes, but Christian theology offers a number of critical and helpful insights into the question of human uniqueness, privilege, and place. Gustafson (1981) provides a touchstone in recent Christian ethics, suggesting a shift from human-centered ethics to God-centered ethics. His later work focuses specifically on “the place of humans in relation to God and to nature” (Gustafson 1994, 77–110). “To sum up, human beings participate in the patterns and processes of interdependence of life in the world. We can and should intervene for the sake of humans and nature itself. Our participation is a response to events and conditions in which we live; it involves valuing aspects of nature in relation not only to our own interests but also the ‘interests’ of other aspects of nature” (110). I would offer only two critiques. First, I believe Gustafson underestimates the historic diversity of opinion within Christianity. Second, the use of nature vis-à-vis humanity privileges humanity by lumping all other concerns into nature; the interests of other species need be no more consonant with one another than they are with those of humanity. The analogy of Israel with the Nations seems particularly apt for Christians as, in the New Testament context, there is a tension between the continuity of the covenant and status of the chosen people, on one hand, and the expansion of the covenant to diverse tribes and peoples on the other. Of course humanity has a unique (descriptive) place in salvation history. Whether it is defined or privileged by its place will be a more complicated question. Citing David Fergusson, Wilkinson (2016, 425) points out that the “Genesis 1 narrative reaches fulfilment not in the creation of Adam and Eve but in the Sabbath day on which ‘the whole creation glorifies its maker.’” Celia Deane-Drummond and Agustín Fuentes (2014) provide a sophisticated review of interspecies relationships in contemporary Christian theology.

Astrobiology provides an opportunity to re-evaluate the seeds of normativity and the soil of science. It helps to visualize the interactions and dependencies of all life on Earth. It presents the possibility of alien life to contextualize and unify Earth life. It also highlights the unique role of humans in shaping the planet—and potentially the cosmos. One cannot say it promotes one doctrine over another, unequivocally, but it does impact the way humanity sees itself and its place in the universe. The hierarchical

and holistic narratives provide a way to think about the relative value of biological and human life within the cosmos, and provide tools for analyzing both seeds and soil as we cultivate new ethical paradigms.

With biological sciences on the rise, this type of inquiry will be essential to developing an axiology, aesthetics, and morality of human life vis-à-vis biological life. It speaks directly to the relationship between biological identity and human identity. How we differentiate humans from other life matters both to our sense of privilege and our sense of responsibility. New powers call for new ways of thinking and deeper reflections on the role of humanity in the universe. Astrobiologists are fond of this line from T. S. Elliot: “We shall not cease from exploration, and the end of all our exploring will be to arrive where we started and know the place for the first time” (*Four Quartets*, Little Gidding V). It applies as much to our life—to our humanity—as to our planet.

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