Introducing Astrotheology

by

Ted Peters

Abstract. This article sets the agaenda and parameters of the emerging field of *Astrotheology,* defined as *that branch of theology which provides a critical analysis of the contemporary space sciences combined with an explication of classic doctrines such as creation and Christology for the purpose of constructing a comprehensive and meaningful understanding of our human situation within an astonishingly immense cosmos.* The four tasks of the astrotheologian are to (1) overcome geocentrism and anthropocentrism; (2) set the conditions for the debate between a single incarnation versus multiple incarnations in Christian soteriology; (3) offer an internal critique to the space sciences; and (4) contribute to public readiness for the day of contact.

Key Terms: astrotheology, astrobiology, extraterrestrial microbial life, extraterrestrial intelligence, SETI, NASA, ETI Myth.

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The God of the Bible, the Creator and Sustainer of all the laws and grandeur that govern the universe;
the God who is personal and who speaks through Nature, through the prophets,
and through the love and intervention of a Savior.
Does this God speak to us, in a sense,
through the wonders we discover
in the heavens through
our telescopes?
-- Jennifer Wiseman (Wiseman, 2005, 172)

This is a kairos moment, the moment to launch a new field of inquiry and reflection, *Astrotheology*. A picture of the cosmos explodes before the eyes of a reader of a recent *Newsweek* magazine cover story, "New Secrets of the Universe" (Greene 2012). Astrobiologists are sending probes to Mars as well as the moons of Saturn and Jupiter, hoping to find the signatures of microbial life. Elon Musk's Space X plan is to take earthlings to Mars and establish a colony. With the help of the Kepler telescope, discoveries of exo-planets in the Goldilocks zone—not too hot and not too cold—occur monthly. SETI Institute scientists listen twenty-four hours per day for radio signals emitted from extra-solar civilizations. METI scientists are targeting star systems to listen to messages sent from Earth. The cultural tree is ripe with the new fruits of astro-enthusiasm.

Since the 1966 publication of Ian Barbour's *Issues in Science and Religion* (Barbour, 1966), scholars in the emerging field of *Science & Religion*—sometimes called *Theology & Science*—have swapped lab coats and clerical collars to draw out the implications of new

discoveries in quantum physics, physical cosmology, evolutionary biology, human genetics, neuroscience, and public policy. Perhaps the moment has come to draw out the implications of astrobiology and related enterprises having to do with space exploration. One item on this list should be given special consideration, namely, the possibility of future contact with an extraterrestrial civilization of intelligent beings. Sometimes the religious scholar is called to respond to cultural currents. A response theology is being called for at this moment.

This challenge to develop a theological response to the space sciences gets intensified when we recognize that a gauntlet has been thrown down. Religious people, especially Christians, are being challenged, virtually threatened. The Christian faith is so fragile, say critics, that contact with new neighbors in space will precipitate a crisis, perhaps even a theological collapse. Like a sledge hammer, ETI contact will smash the rock of ages into pebbles.

Why might traditional religion in general and Christianity in particular face a crisis? Renowned physicist turned astrobiologist Paul Davies provides the swing of the sledge hammer. "We can expect that if we receive a message it will be from beings who are very advanced indeed in all respects, ranging from technology and social development to an understanding of nature and philosophy" (Davies 1995, 49). He goes on to warn us of our new inferiority. "The difficulty this presents to the Christian religion is that if God works through the historical process, and if mankind is not unique to his attentions, then God's progress and purposes will be far more advanced on some other planets than they are on Earth....It is a sobering fact that we would be at a stage of 'spiritual' development very inferior to that of almost all our intelligent alien neighbors" (Davies 1995, 50). The astrotheologian needs to ask honestly: is this really the case?

Defining *Astrotheology*

Let me offer a definition that introduces the task ahead. *Astrotheology is that branch of theology which provides a critical analysis of the contemporary space sciences combined with an explication of classic doctrines such as creation and Christology for the purpose of constructing a comprehensive and meaningful understanding of our human situation within an astonishingly immense cosmos.* I place astrotheology within the larger understanding of theology. According to Robin Lovin, "theology's task is to make sense of reality as a whole and to provide an orientation for meaningful action within it" (Lovin, 2015) 224). With this in mind, astrotheology should not try to become an independent field. Rather, it should see itself as one wheel putting theology on a roll.

In the field founded by Ian Barbour's pioneering work, a creative-mutual-interaction (CMI) has developed between theologians and selected fields within science: physics, cosmology, evolutionary biology, genetics, and neuroscience (Russell 2008: 20-24). What interests the astrotheologian are the discoveries and discussions taking place among astronomers, cosmologists, exobiologists, astrobiologists, astroethicists, and those scientists searching for extraterrestrial intelligence (ETI). As a response theology, astrotheology is at minimum a theology of space science.

Could astrotheology be more than merely a response to the space sciences? On the one hand, it is important for the theologian to respond to culture, especially to the role played in culture by natural science. On the other hand, there are internal drivers for theological speculation and application. What might drive today's theologian to take up the task of astrotheology?

Within the human soul, I think, there lies an openness to the beyond, a primitive awareness of the transcendent, a readiness to

receive a call. God put it there. It belongs to our nature. This openness toward what is beyond is a gift of God's creative grace. And this readiness to listen to God's call does not go away, even if we live lives deaf to God's Word. "Whatever one does, one remains interiorly ordered to absolute communion with God," writes the late Stephen J. Duffy, a Roman Catholic theologian at Loyola University in New Orleans. "To some degree this existential determination seeps into consciousness. It is an attraction and all attractions are necessarily consciously experienced in some measure. In this case it is perhaps confusedly experienced as an appreciation of the goods of the Kingdom. More often this attraction will be lived rather than reflected upon" (Duffy 1992, 23). Perhaps by taking up the question of the cosmic beyond, the astrotheologian might aid human consciousness in trying to understand itself, to listen for the divine call to go beyond even the cosmic beyond.

In what follows we will first review briefly the twin foci of astrobiology and related space sciences, namely, to search for microbial life within our solar system and to search for intelligent life elsewhere in the Milky Way. Then we will turn to pre-Copernican and post-Copernican versions of Astrotheology, noting how openly the question of sharing our cosmos with space neighbors has been posed. This will lead to the astrotheologian's immediate set of tasks, to ask four questions that need theological attention. These four will deal respectively with the (1) scope of creation? (2) one incarnation or many? (3) making a theological critique of astrobiology? and (4) preparing for contact?

Microbial and Intelligent Extraterrestrial Life

Notre Dame University astrotheologian Thomas O'Meara sets the agenda. "Faith follows science's suggestions that on other planets something awaits us terrestrials: star-colleagues, star-mentors, and

star-friends" (O'Meara 2012, 61). Just what is the science to which astrotheology responds? Among the space sciences, astrobiology stands up and says: look at me!

Astrobiology is "the study of the origin, nature, and evolution of life on Earth and beyond," writes University of Arizona astrobiologist Chris Impey (Impey 2004, 4). Lucas John Mix adds, "Astrobiology is the scientific study of life in space. It happens when you put together what astronomy, physics, planetary science, geology, chemistry, biology, and a host of other disciplines have to say about life and try to make a single narrative" (Mix 2009, 4). The science of astrobiology works with two foci: the search for microbial life within our solar system and the search for intelligent life on exoplanets within the Milky Way. Although a second genesis of primitive life forms on Mars or Titan would be scientifically exciting, of greater import to the theologian would be contact with an intelligent species elsewhere in or even beyond our galaxy.

In 2015 NASA revised its previous roadmap with an *Astrobiology Strategy* identifying six major research areas.

- Identifying abiotic sources of organic compounds
- Synthesis and function of macromolecules in the origin of life
- Early life and increasing complexity
- Co-evolution of life and the physical environment
- Identifying, exploring, and characterizing environments for habitability and biosignatures
- Constructing habitable worlds

Has there been a second Genesis? By *second Genesis* we mean "the emergence of life beyond the Earth" (Chela-Flores 2009, 2). "Astrobiology aims at the larger questions of modern science," he writes; "while being squarely set on scientific and technological tools. Science is searching a second Genesis" (Chela-Flores 2009, 109). Or, are we alone?

Steven Dick and James Strick observe that "these are fundamental questions that humanity has asked in increasingly

subtle and refined forms over millennia" (Dick and Strick 2005: 10). Do these questions challenge a geocentric worldview? Yes. "As Darwinism placed humanity in its terrestrial context, so exobiology will place humanity in a cosmic context. That context—a universe full of microbial life, full of intelligent life, or devoid of life except for us—may to a large extent determine both humanity's present worldview and its future" (Dick and Strick 2005: 9).

As the astrobiologist looks beyond Earth, the first thing he or she looks for is microbial life within our solar system. One question nags the astrobiologist: if there has been a second genesis of life on another heavenly body such as Mars or Titan, what if it is so different from life on Earth that we might find it hard to recognize? What if extraterrestrial microbial sized life does not rely on DNA or contain protein? One clue that it is life and not non-life could be found in its effects. Life on Earth has altered our planet's chemistry. Could we look at an environment that looks like it has been influenced by life and then work backwards? Could we start with a biosignature and work backward to the pen that wrote it?

Amino acids might provide researchers with an indicator. In a strictly abiotic or lifeless environment, amino acids are typically six carbon atoms or less long. In biota, we expect acids up to thirty carbon atoms long, with a preference for even-numbered chains. By measuring amino acid structure, we may be able to identify the presence of life forms that differ significantly from life as we have known it on Earth. Could we expect to see on other planets what we have seen on Earth? Yes, answers NASA's Chris McKay. "The chemical signatures we see on Earth are not a quirk of Earth biology but a universal principle" (Mckay 2011, 10). Working with the assumption that the same physics and chemistry we witness here on Earth would apply to every object in space, scientific sleuths are dropping probes and rovers and shovels along with on-site chemical labs onto the surface of every suspected home for life.

When it comes to searching for intelligent life or ETI, searchers look first for a habitat and then try to find out who lives there. Extrasolar planets are thought to provide just such a habitat. Scientists are just at the stage of identifying the extrasolar addresses.

Two methods for detecting extrasolar planets are currently employed by researchers. First, radial-velocity surveys analyze the motion of a star induced by its orbiting partner—that is, by measuring a star's wobble astrophysicists can speculate that it might be caused by the gravitational pull of an orbiting planet. Second, star watchers can engage in visual searches for planets that transit in front of their primary star. When locating a black dot (the shadow side of an orbiting planet?) in front of a brightly lit star, telescope viewers can make a series of photos over a period of time to see if it moves in a regular pattern. If so, the black dot might be considered a transit—that is, a planet in orbit. Direct imaging is difficult, as one might imagine, because each star is bright whereas each planet only reflects the star's light. High contrast techniques are being developed. At the present time, these two methods can detect only large planets, the size of Jupiter. If the technology improves, we may in the future find ourselves able to detect earth sized and biophilic objects as well.

Some astronomers are actually seeing them. In 2009 David Charbonneau at the Harvard-Smithsonian Center for Astrophysics and his co-investigators reported their discovery of a near earthlike exoplanet , GJ 1214b. This "transiting planet" has "a radius 2.68 times Earth's radius, indicating that it is intermediate in stature between Earth and the ice giants of the Solar System" (Charbonneau 2009, 891). Scientists believe this planet contains a huge amount of water surrounding an inner core of iron and nickel with an outer mantle of silicate rock. Its atmosphere is likely made up of hydrogen and helium. This is not yet a duplicate Earth, but it is getting close.

An almost duplicate Earth is *Proxima Centauri b* at 4.2 light-years away. This is an earthlike planet in the habital zone, the

Goldilocks zone. To reside in a habitable zone, temperatures on the planet's surface need to allow liquid water. Placement and width of a habitable zone depends on the brightness of its host star; the dimmer the star the closer must be the planet's orbit.

With the logging of each new exoplanet, astrobiologists give us the sense that we are getting closer and closer to learning the answer to the nagging question: are we alone in the universe? As of this writing, no empirical evidence confirms that we share our universe with second genesis neighbors. Curiously, despite the advances in astronomy and astrophysics, our pre-Copernican ancestors found themselves in almost the same position. They looked at the starry heavens and wondered.

The Spirit of Space in the Soul

The vault of the night heaven elicits within us this sense of wonder. "Cosmology is a voyage of the human spirit," says Harvard astronomer Owen Gingerich (Gingerich 2009, 29). Julian Chela-Fores, a Venezuelan astrobiologist, remarks, "The depth of the questions in astrobiology should be the source of a fruitful dialogue with other sectors of the humanities, including theology" Chela-Flores 2009, 2). Might we suggest that an incipient spirituality lurks already within the astro-imagination? Might the science itself give birth to an astro-spirituality?

David Toolan thinks so. "What, I ask myself, is the effect of post-Einsteinian cosmology on my spiritual practice--and by that I mean both the inward work of prayer and contemplation as well as the outward work of social action? Does the expanding, replenishing universe of the big bang, black holes, and "dark matter" make a real difference to the way in which we believers pray and work?... A post-Einsteinian universe is unimaginably vast and ancient, is blessed with steadfast stability; still more remarkably it is also graced with

process, self-organization, interconnection, communication, fluctuation, and openness. This is a universe whose fullness, diversity, promise, and risk simply dazzle. Given all that, it has to make a difference to our conception of God, our prayer life, our work and action" (Toolan 1997).

Paul Davies challenged the Christian faith coming from one direction: duck because ETI is going to crash into you! Now, David Toolan challenges the faith from the opposite direction: astro-consciousness will enrich your spirituality! Lucas Mix adds, "As a Christian, I think of astrobiology as a way to better understand how God created the world" (Mix 2009, 6). Did our theological ancestors experience astro-awareness and respond? Yes, indeed. We today are heirs to a tradition in astrotheology.

Fortunately, we have two hard working historians who have traced the Western history of concerns regarding extraterrestrial friends and enemies: Michael J. Crowe at Notre Dame and Stephen J. Dick, NASA's historian. These two make it clear that the questions raised by today's astrotheologian are not new. They go back as far as ancient Athens. The seeds of astrotheology were already sprouting in the days of the Parthenon and the peripatetic philosophers.

Here is the story. A controversy broke out between the atomists and the Aristotelians. Atomists such as Leucippus (d. 480 BCE) and Democritus (d. 361 BCE) along with Epicurus (c. ca. 270 BCE) and Lucretius (d. 55 BCE) held that our cosmos is infinitely large with an infinite number of patterns. They posited a plurality of worlds (*aperoi kosmoi*). Somewhere out there in space there might be another world complete with intelligence. Aristotle (d. 322 BCE) and his disciples, in contrast, argued for one world and one world only, ours (Crowe and Dowd 2012). The finite and visible world is all there is, and the Earth is the center. The Christians sided with Aristotle, at least for the most

part. From Aristotle medieval Europe inherited the centering principle, what pundits later called *geocentrism.*

It is important for us to note that geocentrism and the question of many worlds did not sit on top of the Christian theologian's priority list in the pre-Copernican era. However, without much debate, Aristotelian Earth-centrism seemed to make sense in the emerging Christian worldview. The Angelic Doctor, St. Thomas Aquinas (1224-1274), weighed the issue of many worlds carefully. He temporarily entertained an argument in favor of pluralism: "it is better that there be many worlds than there be one because many good things are better than a few" (Summa Theollogiae.I:Q47;A3). Thomas, to the contrary, determined that one world is the superior option. "It is necessary that all things should belong to one world," he said. Why? Because of what Plato and Aristotle had previously said. According to Plato's *Timaeus* 31, the oneness of God makes it appropriate for God to create but one world. And, according to Aristotle ("On the Heavens" I:8: 276-277; "Metaphysics" XII:8:33), perfection is associated with oneness (all things in the world tend to center around a single center) and this implies that one world would better testify to God's perfection.

To the authority of the Greeks Thomas added a scientific argument based on the law of gravity. "For it is not possible for there to be another earth than this one, because every earth, wherever it might be, would be born by nature to this middle point. And the same reason applies to the other bodies which are parts of the universe" (*Summa Theologiae* I.Q47.A3; O'Meara, 2012, 69-70). All heavy items—including other planets—would be drawn toward the single center of gravity, so to speak. This means we have one and only one world.

Let us notice two things here. First, Thomas does not appeal to Scripture to trump reason. Second, Thomas registers no shock or

revulsion at the question. Rather, he even-handedly debates the matter before drawing a negative conclusion.

Thomas Aquinas took one side of the debate, the geocentric side. John Buridan (1295-1358) took the opposite side, the many worlds side. He subjected Aristotle to critical examination, just as Thomas had; but he drew the opposite conclusion. Aristotle, arguing from nature, had prohibited the creation of multiple worlds, because nature obeys the centering principle. But, rather than appeal to nature, could we by faith assert that God could create other worlds of a different type or different species? Yes, says Buridan. "We hold from faith that just as God made this world, so he could make another or several worlds" (Dick 1982: 29).

Buridan was by no means alone with this idea. Nominalist William of Ockham (1280-1347) similarly affirmed that God could create other worlds, even worlds better than the one in which we live (Dick 1982: 33). In his *De docta ignorantia* of 1440, pre-Copernican Nicholas of Cusa affirmed belief in ETI and—apparently overcoming his anthropocentrism--speculated that perhaps extraterrestrials are of higher nobility than we earthlings, that "the earth is perhaps inhabited by lesser beings" (Lovejoy 1936: 115). The pre-Copernican tendency to support geocentrism was based upon loyalty to Aristotle; and this could be offset by appeal to the principle of plenitude, according to which God's gracious love would naturally lead to the creation of as many creatures as possible to benefit from this love. All of this was speculation, of course. The theologians knew this. In certain ways the question of many worlds provides a screen on which we can project the implications of prior theological commitments.

Did the Copernican revolution shock the medievals into what we today deem the heliocentric truth about the universe? No. At least not immediately. The revolution began, of course, with Copernicus' book on revolution, *De Revolutionibus Orbium Coelestium* (*On the Revolutions of the Celestial Orbs*). It was published in Nuremburg by

the German Lutherans in 1543. Copernican cosmology advanced among the Germans with the work of Johannes Kepler (1571-1630); and it leaped forward in Italy with that of Galileo Galilei (1564-1642).

But the father of Danish astronomy, Tycho Brahe (1546-1601), slowed the spin of the Copernican revolution. Although he granted that the other planets might circle the sun, the sun still circled the Earth. The problem with Copernican heliocentrism, he thought, was that it implied that the fixed stars would be very distant. This distance meant they would be disconnected with Earth's system and, hence, useless. At least useless to Earthlings. They would be useful if peopled with their own inhabitants, of course. But Tycho denied that such creatures could "be conferred upon those bodies," and added that "nothing is idle, nothing in vain"—the principle of plenitude. This led him to the conclusion: the Copernican model must be false (Dick 1982, 74). In contrast to Kepler, with whom he worked in Prague, Tycho could not affirm either complete heliocentrism or the existence of extraterrestrial life.

Copernicus, Brahe, and Kepler used their naked eyes to study the stars. Galileo began the new era of telescope viewing. In a letter to Galileo, Kepler wrote, "I must point out that there are inhabitants not only on the moon but on Jupiter too" (Dick 1982: 59). Copernicus' universe was teeming with life, thought Kepler.

We should observe that neither the ancient Athenians nor the medieval scholastics nor the Copernicans used the term *astrotheology*. This label had to wait for post-Copernican times and the work of an Anglican clergyman, William Derham (1657-1735). His book, *Astro-Theology, or a Demonstration of the Being and Attributes of God from a Survey of the Heavens,* was published in 1714. Our use today of this term now has a three century history.

Derham speculated. He contended that each star is itself a sun like ours with a family of orbiting planets, also like ours. These planets orbiting fixed stars, he declared "to be habitable worlds;

places...accommodated for habitation, so stocked with proper inhabitants" (Crowe 2008: 125). Derham could not prove this. So, he asked for either a direct divine revelation or better scientific instruments to confirm or disconfirm his speculation. The task of astrotheology in Derham's era was to glorify God by stressing the immensity and magnificence of God's creation. When we turn to the 21st century, astrotheology's task has become a bit more modest by asking: just how should theologians assess and interpret the findings of astrophysics and astrobiology; and how might theological reflection be affected by these findings?

Astrotheology at Work Today

Astrotheology, like any other branch of Christian theology, must take into account the four primary sources: scripture, history, reason, and experience. Incorporating new scientific knowledge into theological knowledge makes proper use of reason and experience; and examining the history of precedents in philosophy and theology opens the astrotheologian to incorporating history. But, what about scripture? What does the Bible say about extraterrestrial aliens? Nothing.

"At no point in Christian Scriptures do we learn that there is another race of knowing corporeal beings in the universe—or that there is not" writes O'Meara (O'Meara 2012, 43). Pre-Vatican II Roman Catholic giant Yves Congar weighed in, suggesting the absence of biblical material provides an opening for addressing the matter of extraterrestrial beings. "Revelation being silent on the matter, Christian doctrine leaves us quite free to think that there are, or are not, other inhabited worlds" (Congar 1961, 185). No contemporary theologian would require that the Bible address directly each and every new understanding gained by the modern world. Our theological task is to interpret scripture, to extrapolate

and apply what we interpret. Such interpretation requires a certain level of imagination, speculation, and anticipation. The product of interpretation is not apodictic dogma but rather hypothetical or tentative probabilities. This by no means weakens speculative theology, but it does provide us with a meaningful framework within which to live our lives in faith.

When we turn to theological anthropology, we need to speculate about alien nature. Will extraterrestrials be like us or different? Will we share the same nature, the same status before God? Karl Rahner emphasized two attributes belonging to human nature: intelligence and freedom. Intelligence and freedom open us to transcendence, open us to a relationship with God. Might this apply to our new neighbors in space? Rahner addressed the matter. Beings living among the stars who are intelligent and free are "not distinguished in an important way by where they are located in the cosmos...[but rather by] "their intellectual subjectivity determining the reality of space and time" (Rahner 1964, 1061-1062).

Biblical anthropology includes the concept of the *imago Dei.* We human beings are created in God's image. Adam and Eve are given the *imago Dei* in Genesis; and the risen Jesus Christ becomes the eschatological image of God (*eikon tou Theou*) in the New Testament, drawing us into the divine reality itself. Will either the inborn *imago Dei* or the sanctified *imago Dei* apply to extraterrestrials? Yes, says Thomas O'Meara. "Jesus' teaching and life bring an eschatology for Earth and not an astronomy for the Milky Way;...however...the union of the Logos and a terrestrial human would be a strong affirmation of the dignity of corporeal, intelligent life wherever it is found" (O'Meara 2012, 50).

In Western theology and Western culture more generally human dignity is not only an ontological category; it is also a moral category. Dignity implies inviolability. We treat a person with dignity as a moral end, never merely as a means to some further end. Dignity

is our birthright. According to the *Universal Declaration of Human Rights*, General Assembly of UN, 1948: "All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act toward one another but in a spirit of brotherhood."

One theological problem with this concept of dignity, in my judgment, is that the presence of dignity is contingent on possession of certain attributes. If one has intelligence and the capacity for moral freedom, then there exists a warrant for being treated with dignity. An intelligent creature earns the right, so to speak, to be treated as a moral end.

Yet, biblically speaking, the *imago Dei* and its accompanying dignity is a gift of God; it is not a human attribute that warrants God treating us as an end rather than a means. Dignity derives from God's grace, I believe. Brent Waters emphasizes the role of grace here. "Human dignity is not an inherent quality, but is derived from the gift of grace given by God in Christ" (Waters 2006, 190). Like other gifts of God's grace, the *imago Dei* comes to us from beyond us; it is not ours to claim as a byproduct of our capacity to reason. Despite this caveat, I forecast that most astrotheologians will rely upon the previous view, namely, the absence or presence of intellectual reason will provide the criterion for attributing dignity to our friends and neighbors in space.

Be that as it may, Boston University's John Hart draws out the implications of alien dignity based upon intelligence for an ethic of the commons. Space will become a common moral arena for earthlings and spacelings. "The *cosmic commons* is the spatial and local context of interactions among corporeal members of integral being who are striving to meet their material, spiritual, social, and aesthetic needs, and to satisfy their wants....The cosmic commons includes the aggregate of goods which, beyond their intrrinsic value, have instrumental value in universe dynamics or as providers for the

well-being of biotic existence. In the cosmic commons, goods that will eventually be accessible on the moon, asteroids, meteors, or other planets should prove useful to humankind, to other intellilife, and to biokind collectively" (Hart 2010, 377).

Note how for Hart moral responsibility is contingent upon intelligence. "In the cosmic commons...intelligent life has particular responsibilities, including respect for forms of life less complex than it is, and regard for common habitat" (Hart 2010, 377). Even so, the speculative vision of an interstellar community of intelligent beings can be inspiring to the new breed of astrotheologians. O'Meara exhibits this enthusiasm. "Interactivity and community are patterns in reality reaching from the Trinity to the families of stars. Possibly there lies ahead in Earth's future not only the knowledge of individual planets with their societies but also an awareness of galactic communality" (O'Meara 2012, 38-39).

The Scope of God's Creation

Can we imagine a galactic community or a cosmic commons? This brings me to the first of four tasks I would like to lay on today's astrotheologian. First, *Christian theologians along with intellectual leaders in each religious tradition need to reflect on the scope of creation and settle the pesky issue of geocentrism* (Peters 2010, 2013). One astrotheologian, David Wilkkinson, draws the big picture: "Christian theology understands the unfolding history of the Universe as creation, where human beings have a special though non-exclusive place within it" (Wilkinson, 2013, 108). Another astrotheologian, Michael Waltemathe, puts it this way: we need "to overcome the understanding of Earth as the sole place of creation and give humanity the perspective of its place in the whole universe" (Waltemathe, 2016, 119).

Critics within and without Christian theology allege that this faith is geocentric and anthropocentric. This makes the Christian faith anachronistic and out-of-date due to increased awareness of the vastness of our universe and the possibility that we share it with other sentient creatures.

We could see from the discussion above that pre-Copernican geocentrism was something shared between European Christians and all those who inherited the ancient Athenian worldview. The Aristotelian centering principle dominated. Even so, some pre-Copernican theologians had gone against the stream and argued for other worlds and for neighbors in space, all of whom would be creatures of the one God of the cosmos. As geocentrism fell in science it fell also in theology; but theological interest in extraterrestrial neighbors continued without significant change from pre-Copernican to post-Copernican times.

The anthropocentrism of our medieval ancestors was similarly founded on ancient Athenian values, especially the value attributed to intellectual capacity, intelligence, and reason. This human attribute continues to dominate contemporary anthropology in both theological and secular worldviews. The Enlightenment doctrine of human dignity depends upon the high value we place on this attribute. I recommend that the Christian theologian provide a critical examination of the assumptions at work here; but we can at least cease blaming an atavistic Christian faith alone for holding to such an anthropocentrism.

With geocentrism and anthropocentirsm in mind, the astrotheologian can evaluate the critique lodged by Paul Davies cited above. Is the Christian faith fragile? Will it collapse at contact? There is no evidence to support Davies here. To the contrary, just the opposite seems to be the case. Michael Crowe makes this clear. “It is sometimes suggested that the discovery of extraterrestrial life would cause great consternation in religious denominations. The reality is

that some denominations would view such a discovery not as a disruption of their beliefs, but rather as a confirmation" (Crowe 2008: 328-329; Peters 2009). Among the tasks for the astrotheologian, then, is the need to clarify if not correct the regnant opinion on the matter of geocetnrism. This correction can take the form of enlarging the scope of the concept of creation. Our world is the universe; the upper limit or totality of all physical things including the solar system, the Milky Way, the systems of galaxies.

There is nothing that lies beyond the scope of God's creation according to the *People of the Book:* Jews, Christians, and Muslims. God is the creator of all things, visible and invisible, known and unknown. When biblical Christians speak of creation, it includes all of physical reality. The immensity of God surpasses the immensity of the universe. After all, since Anselm we have thought of God as that than which nothing greater can be conceived. Therefore, says Georgetown University's John Haught, "All possible worlds have a common origin and depth in the oneness of God" (Haught 2003, 179).

Expanding the scope of creation from planet Earth to include the entire cosmos, including space neighbors, has already been addressed by many of our most respected theologians. Karl Rahner acknowledged that there are "many histories of freedom which do not only take place on our earth" (Rahner 1978: 446). Hans Kűng holds that "we must allow for living beings, intelligent—although quite different—living beings, also on other stars of the immense universe"(Kűng 1984: 224). Paul Tillich asked: how should we "understand the meaning of the symbol 'Christ' in the light of the immensity of the universe, the heliocentric system of planets, the infinitely small part of the universe which man and his history constitute, and the possibility of other worlds in which divine self-manifestations may appear and be received?" (Tillich 1951-1963, 2:95). Geneticist and Evangelical spokesperson, Francis Collins, explodes: "If God exists...why would it be beyond His abilities to interact with

similar creatures on a few other planets or, for that matter, a few million other planets" (Collins 2006, 71).

The ETI question is by no means the only one to ask when expanding the scope of the concept of God's creation. The issue has to do with the nearly four hundred billion stars within the Milky Way and the fifty billion galaxies beyond the Milky Way. It has to do with a 13.8 billion year history and perhaps a 100 billion year future. It has to do with both the personal and non-personal history of our cosmos in light of God's providence and promise. Robert John Russell argues strenuously for God's providential action at the sub-atomic quantum level and—even though atoms are small they are everywhere!—divine action applies to Andromeda as it does here. "When we shift to an *in*deterministic world, a new possibility opens up: One can now speak of objective acts of God that do not require God's miraculous intervention but offer, instead, an account of objective divine action that is completely consistent with science" (Russell 2008: 128). An astrotheologian is a cosmic theologian.

Still, breadth is no substitute for depth. God may be beyond, but God is also intimate. Astrotheologian David Wilkinson broadens the scope of the concept of creation to include extraterrestrials; but he reminds us that the deeper dimensions of the human soul remain the focus of God's redemptive work. "We are not alone. The God who made the Universe wants to be in relationship with us. There is a purpose to our existence. We are created as an act of extravagant love by God....Extraterrestrial life may exist and even intelligent life...But such life will never deliver answers to loneliness, purpose, identity, fear and salvation" (Wilkinson 1997, 146).

A Planet-Hopping Incarnations?

The second of the four initial questions on the astotheologian's agenda is the Christological question. Will the divine become

incarnate on many planets for many species of aliens? Or, is one incarnation—Earth's incarnation in Jesus Christ—enough? Here is the directive: *the astrotheologian should set the parameters within which the ongoing debates over Christology (Person of Christ) and soteriology (Work of Christ) are carried on.* It should be dubbed a mistake to connect the incarnation with geocentrism. The question of multiple incarnations is a reasonable one, but not if the negative answer justifies geocentrism.

O'Meara sizes up the issue. "As incarnation is an intense form of divine love, would there not be galactic forms of that love? An infinite being of generosity would tend to many incarnations rather than to one....A succession of incarnations would give new relationships and new self-realizations of God....Incarnations among extraterrestrials would not be competing with us or with each other" (O'Meara 2012, 47).

Jesuit evolutionary theorist Pierre Teilhard de Chardin would likely side with O'Meara. He affirmed multiple incarnations while decrying geocentrism. "The hypothesis of a special revelation...teaching the inhabitants of the system of Andromeda that the Word was incarnate on Earth, is just ridiculous. All that I can entertain is the possibility of a multi-aspect Redemption which would be realized on all the stars" (Teilhard 1971, 44). Similarly, Tillich argued that we should expect divine self-manifestations among intelligent species on other planets. He granted the necessity for speculation here. "Incarnation is unique for the special group in which it happens, but it is not unique in the sense that other singular incarnations for other unique worlds are excluded...Man cannot claim to occupy the only possible place for incarnation" (Tillich 1951-1963, 2:95-96).

Rejecting multiple incarnations in favor of only the one on Earth, Wolfhart Pannenberg acknowledges that the "discovery of nonterrestrial intelligent beings" is a matter of theological concern.

Then the Munich theologian argues that "the Logos who works throughout the universe became a man and thus gave to humanity and its history a key function in giving to all creation its unity and destiny" (Pannenberg 1991-1998, 2:76). The history of salvation on Earth will eventually converge with the history of the entire universe, and the redemptive work of Earth's Christ will be efficacious for the entire cosmos.

O'Meara takes a puzzling stand on this issue. On the one hand, he seems to affirm multiple manifestations of a revelatory or disclosure sort. On the other hand, he denies that these would constitute additional incarnations of Jesus Christ. "Incarnation in a human being speaks to our race. While the possibility of extraterrestrials in the galaxies leads to possible incarnations and alternate salvation histories, incarnations would correspond to the forms of intelligent creature with their own religious quests. Jesus of Nazareth, however, is a human being and does not move to other planets....If the risen Jesus Christ visited another planet, it would be a celestial disclosure, but it would not be a further incarnation....The possibility of incarnation for extraterrestrials does not diminish the reality of Jesus Christ" (O'Meara 2012, 48-49). What O'Meara seems to be saying is this: God's eternal *logos* might manifest itself multiple times on many planets, but the historical Jesus Christ (the human *hypostasis*) would not be duplicated. Perhaps this is what each theologian means when he or she supports the idea of multiple incarnations.

The astrotheologian should be cautious here. An argument for a single incarnation ought not to double as an argument in favor of geocentrism. Philip Melanchthon (1497-1560) provides a misleading example. Despite the fact that the Lutherans at Wittenberg and Nuremberg had been responsible for the publication of Copernicus' *De Revolutionibus,* Reformer Melanchthon argued against the plurality of worlds on Christological grounds. "The Son of God is

One; our master Jesus Christ was born, died, and resurrected in this world. Nor does He manifest Himself elsewhere, nor elsewhere has He died or resurrected. Therefore it must not be imagined that there are many worlds, because it must not be imagined that Christ died and was resurrected more often, nor must it be thought that in any other world without the knowledge of the Son of God that men would be restored to eternal life" (Dick 1982: 89). Despite what the first Protestant systematic theologian says here, the existence or non-existence of other inhabited worlds with intelligent creatures is not a Christological question. It is a scientific question. Or, within theology, it is a question about the scope of creation.

The question of multiple incarnations depends in part on whether one thinks of soteriology in terms of revelation or in terms of atonement. If the work of Christ is primarily that of a teacher who reveals the truth about God, then one would tend to embrace multiple incarnations, one for each intelligent species whom God wishes to invite into the divine fellowship. If, on the other hand, one thinks of the work of Christ in terms of atonement—as a work of redemption accomplished on behalf of the entire fallen creation—then a single incarnation would suffice.

Let us compare John Polkinghorne with George Coyne. Polkinghorne seems to embrace the first option, Christ as revelatory. Therefore, he needs to affirm species-specific appearances on various planets. "God's creative purposes may well include 'little green men' as well as humans, and if they need redemption we may well think that the Word would take little green flesh just as we believe the Word took our flesh" (Polkinghorne 2004: 176). In contrast, former Vatican Observatory director George Coyne opts for the second, for a single work of atonement efficacious for all. "How could he be God and leave extraterrestrials in their sin? After all he was good to us. Why should he not be good to them? God chose a very specific way to redeem human beings. He sent his only Son, Jesus...and Jesus gave

up his life so that human beings would be saved from their sin. Did God do this for extraterrestrials?...There is deeply embedded in Christian theology…the notion of the universality of God's redemption and even the notion that all creation, even the inanimate, participates in some way in his redemption" (Coyne 2000: 187).

Whether an astrotheologian sides with multiple incarnations or a single one, the key is that God's redemption is cosmic in scope. Citing the patristic tradition, Keith Ward rightly foresees God's eschatological future as "the uniting of all things—all galaxies and whatever beings there are in them—in Christ, the creative Word of God" (Ward 2002: 244).

Should Theology Critique Science?

The third item on the astrotheologian's To Do list includes analyzing what we received from the work of our scientists. Should we accept what natural scientists say about our world without criticism? Or, should the theologian provide an analysis of scientific claims that may reveal hidden matters relevant for theological assessment? With the latter in mind, here is the third agenda item: *theologians should analyze and critique astrobiology and related space sciences from within, exposing extra-scientific assumptions and interpreting the larger value of the scientific enterprise*. Although scientists should be respected and honored for what they know and for what they promise, scientific claims should not be given a free pass. Scientific claims should be subjected to critical review by religious thinkers.

The theological critique of science targets two domains: first, mistaken images held within the scientific community of theological matters and, second, assumptions and trajectories that frame the scientific picture itself. Regarding the first, Heidelberg theologian Michael Welker speaks forcefully: "Theology can and must challenge the natural sciences to correct their false perceptions of theological

themes and contents" (Welker 2012: 14). Correcting mistaken views of what religious believers actually believe—mistaken by both scientists and theologians in some cases--warrants the theologian's attention. The distortions proffered by scientist Paul Davies, referred to above, should receive just this kind of critical review so as to get clear on just what is at stake theologically.

In addition, the theologian may on occasion need to enter the internal domain of science with analytical and critical tools. Quite frequently extra-scientific or even ideological commitments slip into scientific frameworks at the level of assumption. Materialism and ontological reductionism, among other ...isms, are common. Even atheism in many cases. In the field of astrobiology and its sister, SETI, an over-interpreted variant of Darwinian evolution frames and guides the research program. Despite the fact that leading evolutionary biologists decry the presence of a progressive entelechy or directional purpose in evolution, space researchers frequently work on the assumption that life's genesis is almost inevitable where pre-biotic chemistry is present and, even more suspiciously, that once life gets going it will progress toward increased complexity, toward intelligence, and toward science and technology as we know it. In short, the presumed purpose of the entire history of our natural cosmos is to produce the very persons studying the cosmos, our scientists (Peters 2008; 2009). This is a disguised form of geocentrism, now transformed into scientist-centrism. Religious intellectuals may wish to point this out from time to time.

A close look will show that mythical elements are alive and well within the scientific worldview. The extra-scientific leaven here I dub the *ETI Myth* (Peters 2009, 2014). The betraying word in the myth is 'advanced'. The ETI Myth is a conceptual set that presupposes a conflation of evolution with progress leading to the following speculation: a civilization on other planet with more time to evolve will be more advanced in science and technology than we on Earth.

With advances in science and technology come living without war and with more charitable morality. Implicitly, science saves. And a more advanced science coming from the heavens will bring Earth the equivalent of secular salvation. "The SETI faithful," avers NASA consultant Linda Billings, "used the so-called Drake equation to construct a mythology, a sort of origins myth, about extraterrestrial intelligent life in the universe" (Billings, 2016, 317).

James Herrick the term "Myth of the Extraterrestrials" where I use "ETI Myth." Because science fiction has influenced science proper, he contends, this myth includes to "the idea that intelligent extraterrestrials exist and that interaction with them will inaugurate a new era in human existence" (Herrick 2008: 51). Spiritually deprived modern culture is thirsting for superior entities in space who can save our planet and, according to Herrick, this is a poor substitute for the classic God of theism and its genuine promise of redemption. Herrick fears that the ETI Myth--replete with the alleged evolutionary promise that we can employ science and technology to achieve our own redemption and that our more highly evolved ETI neighbors are already where we are going—will replace the Christian faith, not augment it. "This is the Christian church's challenge today—to reclaim its story and tell it in such a way that it stands out among all the others as authentic, as the Great Story that other stories have often sought to imitate" (Herrick 2008: 252). Or, "The biblical message is that transforming grace rather than an evolving human race is the means of discovering our spiritual destiny. Salvation is the liberating gift, not of benevolent aliens, but of a preexistent, creating and redeeming God" (Herrick 2008: 261).

The astrotheologian should subject astrobiology to careful scrutiny, because in bed with the science just might be a pseudo-theology, a mythical hope for secular salvation. This certainly seems to be the case in many versions of the space sciences. It just may fall to the theologian to distinguish sharply between what counts as good

science and what counts as disguised religion. It is the former that we want from the scientific community, not the latter.

To say it another way: what the theologian wants from the scientist is good science, not bad theology. We need to ask our space scientists to stop practicing theology without a license.

In sum, astrobiology and its sister fields should be celebrated for the fertile science that continues to produce new knowledge about our immense and complex universe. However, this celebration is limited to science that remains science. The theologian should offer a critique when the science drifts toward disguised ideology or substitute religion.

What About the UFO Phenomenon?

The astrotheologian partners primarily with the astrobiologist. Astrobiology is a growing field within natural science, and it is gaining public as well as private financial support. Astobiologists and other space scientists are appropriate partners for today's astrotheologian to pursue his or her work.

Still we must ask: should the astrotheologian address matters arising from the UFO phenomenon? Yes. This is because the UFO phenomenon is a *cultural* phenomenon, and culture belongs on the list of sources demanding theological analysis and interpretation. In addition, UFO believers believe, among other things, that they belong to science. Science and UFO belief overlap at the cultural level.

What we see obliquely in SETI becomes a bit more clear among UFO believers, namely, hope for secular salvation. This hope is based on an extrapolation of the doctrine of progress, mentioned earlier. Fordham University communications professor Lance Strate sees that a myth is at work here in the cultural context of UFO reports. Strate points to "a persistent fantasy theme regarding UFOs that could be considered a new kind of religious belief. The idea that aliens who

are more technologically advanced than us would also have to be more advanced ethically, morally, and spiritually: it follows that they are avoiding contact because they see humans as immature, and that the prospect of first contact as too disruptive to our societies, but that they are studying us, and ready and willing to step in and save us should our penchant for self-destruction every takes to the brink of nuclear war" (Strate, 2016, 66). The ETI Myth in its UFO form relies on the doctrine of progress inserted into the theory of evolution so that we can imagine aliens in space who are more advanced than we earthlings in science, technology, morality, and spirituality. If they come from the heavens to Earth, they will bring salvation. The root doctrine is this: science saves. And if terrestrial science falls short, then a heavenly science will certainly do the trick.

So powerful is this myth of secular salivation that it drifts into religious beliefs proper. Revivalist preacher and purported leader of American evangelical Christianity, Billy Graham (b.1918), wrote, "Some...have speculated that UFOs could very well be part of God's angelic host who preside over the physical affairs of universal creation. While we cannot assert such a view with certainty...nothing can hide the fact that these unexplained events are occurring with greater frequency around the entire world....UFOs are astonishingly angel-like in some of their reported appearances" (Graham 1975: 9-14 *passim*).

Some fundamentalists to Graham's right, in contrast, identify flying saucers with Lucifer's angels, with demons, and seek to discourage fascination with these mysteries in the sky (Allnutt). To Graham's left is Barry H. Downing, a Presbyterian minister with a doctorate in science, who seeks to bring harmony with his book, *The Bible and Flying Saucers.* Downing offers a hermeneutic of scripture based upon an extraterrestrial interpretation (Downing). He endorses the *ancient astronaut* theory, according to which technology and even life itself has been seeded and cultivated on earth by extraterrestrial

gardeners. What ancient Christians thought were visits from supernatural beings were in fact natural—though extraterrestrial—beings.

Are visiting ufonauts divine or demonic? Orthodox interpreter of culture Seraphim Rose contends that the UFO phenomenon is demonic. The devil has placed what looks like spaceships in our skies to satisfy the hunger of modern spiritually starved earthlings with a meal of naturalistic and futuristic religious belief. The eschatological utopia offered by alleged aliens who are more evolutionarily advanced than we is a delusion, a temptation to take us away from the true revelation in Jesus Christ. "Dabbling with UFOs can be as dangerous as dabbling with black magic" (Rose 2004: 12).

For the most part today's astrotheologians dodge the extraterrestrial hypothesis associated with Ufology and side primarily with what they deem the more credible sciences of space exploration. Why? Because, as Albert Harrison reports, "Almost sixty years of energetic research has failed to convince scientists that UFOs transport visitors from our own future, carry beings from another dimension, or bring us aliens from outer space" (Harrison 2007: 79). Like Jacob and Esau, ufologists and astrobiologists are rival siblings, seldom seen together at the same family barbecue. The split between ufologists and establishment scientists signals to the theologian that he or she must apply a more comprehensive hermeneutic of culture just to understand what the deeper issues are that lie beneath this secular split.

Getting Ready for Contact

As of this writing, no empirical evidence exists that confirms the existence of microbial life on other planets or moons let alone off-Earth intelligent beings. Still, we cannot predict what will happen tomorrow. We need to speculate and anticipate. This brings us to the

fourth astrotheological task: *theologians and religious intellectuals should cooperate with leaders of multiple religious traditions and scientists to prepare the public for the eventuality of extraterrestrial contact*. No one can predict with precision exactly what is coming. SETI astronomer Seth Shostak forecasts that confirmation of extraterrestrial life "would be received with interest rather than fear in most quarters" (Shostak, 2015, 19).

How much terrestrial interest in the extraterrestrial contact? If the day of extraterrestrial contact arrives, re-thinking our terrestrial worldviews should follow. This is likely to be complex, not simple. Albert Harrison observes, "we cannot simply incorporate extraterrestrial ideas without thinking them through, because our systems (supranational, societal, and organismic) have highly interrelated parts, so changes in one arena yield changes in another" (Harrison 1997: 298). Religion is one of those parts, perhaps even foundational for revised worldview construction. John Hart foresees that "the collaboration of scientists, ethicists, and theologians will enhance both reflection on Contact, and terrestrial-extraterrestrial interaction when Contact occurs" (Hart 2010: 390). Cooperation and collaboration are the watchwords.

Planetary readiness informed by wisdom drawn from Earth's historic religious traditions is being called for here. Secular or scientific anticipations are not enough. Religious readiness will be helpful to both religious and non-religious sectors alike. For public policy theorists anticipating the impact of contact, it would behoove them to engage theologians. We might "gain insights from theology in the possible nature of extraterrestrials that we might not consider if we focused only on human nature as studied by science," says METI's Douglas Vakoch (Vakoch). It appears clear that today's astrotheologian can contribute to wider public policy concerns.

On the one hand, the astrotheologian speaks to the wider culture and perhaps to the scientific community within the culture.

On the other hand, the astrotheologian speaks to the church. Should Christian believers within the church see ETI contact as a threat or opportunity? "Christians should expect to learn new things about God from an encounter with aliens," says David Wilkinson; "but they would also be in a position to share the good news that God has revealed himself in becoming a human being and offered salvation" (Wilkinson, 2013, 179).

Sometimes theology is demeaned or ridiculed for following science, and for following it too slowly. Science is frequently described as progressive while religion is pictured as behind, recalcitrant, obstructive. Whether this caricature is accurate or not, the excitement over the prospects of extraterrestrial contact with a second genesis should prompt in the theologian a sense of responsibility. Whether the day of contact comes or not, no harm will be done if we ready ourselves. More can be said. Christians are future-oriented because of God's promised eschatological kingdom. We expect the new. So it fits the Christian profile to ready ourselves for what might be new and fascinating.

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