



Astrotheology's contribution to public theology: From the extraterrestrial intelligence myth to astroethics

**Author:**Ted Peters^{1,2} **Affiliations:**

¹Center for Theology and the Natural Sciences, Faculty of Theology, Graduate Theological Union, Berkeley, CA, United States

²Department of Systematic and Historical Theology, Faculty of Theology and Religion, University of Pretoria, Pretoria, South Africa

Research Project Registration:**Project Leader:** J. Buitendag **Project Number:** 2402343**Description:**

This research is part of The research project 'Understanding Reality (Theology and Nature)', directed by Prof. Dr Johan Buitendag, Department of Systematic and Historical Theology, Faculty of Theology and Religion, University of Pretoria.

Corresponding author:

Ted Peters,
tedfpeters@gmail.com

Dates:

Received: 20 May 2021

Accepted: 05 July 2021

Published: 26 Aug. 2021

How to cite this article:

Peters, T., 2021, 'Astrotheology's contribution to public theology: From the extraterrestrial intelligence myth to astroethics', *HTS Theologiese Studies/Theological Studies* 77(3), a6855. <https://doi.org/10.4102/hts.v77i3.6855>

Read online:

Scan this QR code with your smart phone or mobile device to read online.

Public theology is conceived in the church, reflected on critically in the academy and addressed to the world for the sake of the world. The development of a theology of nature is included in the public theologian's list of tasks of nature that is scripturally based and heavily informed by the natural sciences. Astrotheology is one product. Astrotheology engages astrobiology and other space sciences, firstly, by critically exposing the extraterrestrial intelligence (ETI) myth at the heart of science and secondly, by partnering in thinking through public policy proposals with astroethicists.

Contribution: The HTS collection on 'Theology and Nature' sparks theological discussion both within and beyond the church. By developing the fields of astrotheology and astroethics, this article contributes to a 'Theology of Nature' as an exercise in Public Theology.

Keywords: astrobiology; astrotheology; astroethics; extraterrestrial life; ETI; ETI myth; public theology; public policy; SETI; NASA.

Introduction

Theology, according to Johan Buitendag at the University of Pretoria, is 'a scholarly endeavour of believers in the public sphere to inquire into a multidimensional reality in a manner that matters' (Buitendag 2020:1). Note that for Buitendag theology takes place in the 'public sphere'. Even though the theologian earnestly seeks to edify the faithful in the worldwide Christian community, the theologian may also address those outside the church in the public sphere. Addressing what matters in the wider culture is the aim of the public theologian.

Space matters. Space matters to the public theologian on two counts. Firstly, outer space today provides a physical symbol that tantalises our innate religious yearning for transcendence. 'Apollo [Space Programme] evoked, in a metaphorical and absolutist sense, emotions of awe, devotion, omnipotence and most importantly redemption for humanity', observes Robert Launius, former NASA historian (Launius 2013:49). 'Redemption for humanity'? Really? Could there be an awakened religious sensibility yawning and stretching within the space sciences?

Public theologians should draw up such hidden religious meanings buried within secular experience to make them transparent. Borrowing from theologian Langdon Gilkey, I refer to this method as either *theology of culture* or the *hermeneutic of secular experience*, which attempts 'to see what religious dimensions there may be...in ordinary life...which will uncover what is normally hidden and forgotten' (Gilkey 1969:234). The astrotheologian will lift up for astrobiologists as well as the wider public the inherent religious sensibilities that are stimulated by the space sciences.

We note how the possibility of discovering either microbial life or intelligent life already prompts public discussion over the place of humanity in the universe and prompts church discussion regarding the scope of God's creation (Peters 2011). Astrobiology prompts astrotheology. Hybrid astronomer and Methodist theologian David Wilkinson contends that extraterrestrial life is the theologian's business:

Theologians need to take seriously SETI [Search for Extraterrestrial Intelligence Institute] and to examine some central doctrines of religious belief in light of the possibility of extraterrestrial life, hopefully with a spirit of...curiosity. (Wilkinson 2013:3-4)

Curiosity alone should elicit from the astrotheologian a scientifically informed speculation regarding the possible existence of God's creatures living elsewhere in this magnificent universe.

The second way in which space matters is ethical. Scientific space exploration combined with the growing momentum to place human settlements on the Moon and on Mars is raising a host of

Copyright: © 2021. The Authors. Licensee: AOSIS. This work is licensed under the Creative Commons Attribution License.

Note: Special Collection: Theology and Nature, sub-edited by Johan Buitendag (University of Pretoria).

public policy issues that prompt ethical deliberation. 'The job of ethics is to evaluate issues of right and wrong, or good and bad, directing our focus to normative questions of value', say space philosophers Carol Cleland and Elspeth Wilson (Cleland & Wilson 2013:29). Could a theologian contribute to public policy discussion? Yes, indeed, answers Boston University astrotheologian John Hart:

Theology can have a positive impact on terrestrial-extraterrestrial ecological and commercial conduct in theory and in practice; complement scientific thought, research, and development; and promote interplanetary and intercultural ecological and ethical sustainability as a corrective for ecologically harmful and politically unrestrained industrial, commercial, or military projects. (Hart 2010:389–390)

Public theology needs a theology of nature

'Public theology appropriately denotes a field and insists on ways of communication beyond the churches into the public sphere', Brazilian theologian Rudolf von Sinner avers (Von Sinner 2017:247). Public theology reaches out beyond the doors of the church into the public square to deal with matters of economic, racial and political justice. These belong to public theology's prophetic and political tasks. Yet, there is more. Public theology deals with the whole *ecumené*, the entire sphere of human reality embedded contextually in the history of God's creation. There is no domain of existence that could not be addressed by theological *loci* such as creation and redemption. There is no corner of reality that escapes the creative and redeeming reach of our gracious God. 'Public theology', according to Dirk Smit at Stellenbosch, 'is ultimately based on the ecumenical longing to serve the God of the fullness of life – to participate in the divine economy of love and care, grace and blessing' (Smit 2017:88). Might this include the scientific interpretation of the natural world?

The public orientation to Christian theology, according to University of Chicago's David Tracy, requires that the theologian self-consciously and responsibly addresses three publics: the church, the academy and the wider culture (Tracy 1984:30). Science plays a defining role in our increasingly planetised wider culture. Rubberneckers the world over are sticking up their heads to see what is going on in fields such as astronomy, astrophysics and especially, astrobiology. Is it time for the theologian to become an astrotheologian?

Although the church can listen in, the astrotheologian speaks to the astrobiologist not for the sake of the church but for the sake of the wider culture. Our increasingly global culture is space conscious. Not only do earthlings fly to imaginary galaxies in *Star Wars* and *Star Trek*, actual entrepreneurs are currently paying for their own trips into space. Governments and private investors are eager to launch colonists to settle on Mars. UFO (Unidentified Flying Objects) aficionados are demanding that the secret be told, namely that our planet is already being visited by extraterrestrial intelligences (ETIs). Our context petitions the astrotheologian to develop a *theology of nature* that is cosmic in both space and time.

Astrotheology as public theology

Astrobiology is the stimulus. Astrotheology is the response. Well actually, astrotheology responds not only to this particular space science but to the wider culture of *Star Wars* and UFO sightings as well.

Perhaps it is more accurate to say that astrobiology provides the occasion for the theologian to engage science about matters having to do with outer space. Mix (2009), who currently holds the Baruch S. Blumberg Chair in Astrobiology at the U.S. Library of Congress, tells us that:

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. (p. 4)

Can the public theologian offer a contribution to the construction of this 'single narrative'? Only if the theologian drinks from the same fountain of scientific knowledge. With this in mind, I submit my definition: *Christian 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 (Peters 2018b:9–10).

The main point of this article is to show that astrotheology carries out at least one task of the public theologian. The five tasks of public theology are these: the pastoral, apologetic, scientific, political and prophetic tasks (Peters 2018c). Here we are concerned particularly with the scientific task. As an exercise in the horticulture of systematic theology, the public theologian cultivates a scientifically fertilised theology of nature. Like a well-tended garden, this underlying theology of nature will produce nourishing fruits that can be harvested to sate our hunger for interdisciplinary dialogue.

Historically, the most relevant doctrinal *loci* are creation, anthropology and eschatology. Is the glory of God manifest in nature's beauty? Is the mind of God manifest in the laws of nature? Is the image of God manifest in human nature? Is the promise of God's redemption in any way anticipated in nature?

Or, more specific to astrotheology: can we expect the same grace of God to prevail in the 400 million star systems of our Milky Way Galaxy? Will intelligent beings living in an extraterrestrial civilisation bear the *imago Dei*? Should we expect extraterrestrials to sin like us? To love like us? To hope like us? Having already planted these questions in our theological garden, we can fertilise the soil with astrobiology and then watch the hybrid fruits grow.

Theology of nature

'I define theology as faith seeking understanding, love and hope', says Nigerian Jesuit Agbonkhanmeghe Orobator

(Orobator 2018:5). As steam rises from a brewing pot, it expands. Can our faith in the creator God expand our understanding to include all of nature? Can it expand to include scientific interpretations of nature? As faith expands in understanding, does it construct a comprehensive and coherent worldview? Yes, it must.¹

'One cannot do without a worldview', avers Christian philosopher Nancey Murphy (Murphy 2018:124). By worldview construction I invoke the task of what was once known as the *science of theology* (*theologia scientia*) as we find in Augustine, Anselm and Thomas, namely to construct a picture of the whole of reality within which everything relates to the one gracious God of creation and redemption.

What we learn about nature through contemporary science should find a place in this worldview. And theology's comprehensiveness should be complemented with coherence. Cambridge theologian Sarah Coakley places such worldview construction in the centre. Systematic theology, she says, 'is an integrated presentation of Christian truth ... wherever one chooses to start has implications for the whole and the parts must fit together' (Coakley 2009:3). Within a systematic theology that is both comprehensive and coherent we must fabricate a theology of nature that extends to the one if not two trillion galaxies that inhabit our cosmos.

Is theology of nature identical to natural theology? No. Natural theology and theology of nature are distinguished by their starting points. Natural theology starts with nature. Then, typically, it draws conclusions about nature's creator. Theology of nature, in contrast, starts by lighting a fire under faith's pot, which then brews expanded understanding to envelop the natural world as described by science.² A theology of nature is informed by science whilst relying upon special revelation in Scripture as its first source. 'A theology of nature is appropriate as long as it is suitably qualified by proper attention to revealed theology', says Oxford's Celia Deane-Drummond forcefully (Deane-Drummond 2009:xvi).

There is more to the theology of nature than merely its method. Because our worldview includes the creating and redeeming God, our understanding of nature deepens. Julian Chela-Flores, astrobiologist at the Simon Bolivar University in Venezuela, adopts a theology of nature that deepens. 'Accepting science [the theology of nature] attempts to come to a more fundamental understanding' (Chela-Flores 2019:30).

To employ another metaphor, the public theologian should allow natural science – in this case astrobiology – into the citadel of faith. There is risk here. What if science becomes a Trojan horse? This risk is especially acute in the African

1.The very nature of God requires that the systematic theologian engage in comprehensive and coherent worldview construction. At least according to Klaus Nürnberger. 'God is all over – in the galaxies, the cells of our bodies and the thoughts of our minds – but "he" is there as the transcendent "Wherefrom" and "Whereto" of reality rather than as a part of reality' (Nürnberger 2015–2019:2:4).

2.*Theology of Nature* 'asks how belief in God based on religious experience and in historical tradition can be related to the scientific understanding of nature today' (Barbour 2006:114).

situation, where the benefits of science are coveted but European imperialism is shunned. Veldsman (2020) at the University of Pretoria sounds the alarm:

[W]hen we advocate for the sciences in Africa, we will have to do so with open eyes and hearts, seeing both the value of engaging with the sciences and the problematic implications and entrenched dangers of Western models of science and rationality that make unfounded claims to be universally valid. (p. 178)

Science and its progeny, technology, mean power. Does Africa risk ceding more power to Europe when admitting its science?

I recommend letting the Trojan Horse into the citadel of African Christianity, but critically. Firstly, empty the horse of its clandestine soldiers by blunting the spear points of scientism, reductionism and naturalism. These '...isms' are actually ideologies; they all too frequently sit on top of what would otherwise be wholesome science.³ Today's belligerent atheists ride the waves of the internet and dock on the mental shores of every continent. With malice of forethought they undermine religious traditions by falsely claiming science as the justification for reducing every precious spiritual belief to quantifiable physical processes. No cell phone in any African country can defend itself from this Trojan Horse incursion.

The public theologian says 'yes' to science but 'no' to scientism. The 'no' should be shouted against modern Western scientism when it tries to re-colonise every local way of thinking. The public astrotheologian maintains the right to critically analyse astrobiology or any other science, for that matter. Discourse clarification of scientific language complements worldview construction.

Evolution on Earth and elsewhere

Before we depart from earth to travel to the heavens, the Christian theologian must make peace with Darwinian evolution at home. Why? Because the astrobiologist relies on evolutionary theory as Elon Musk relies on his Tesla. Musk drives his Tesla in space just as he does on earth.

Astrobiologists are routed by NASA's *Astrobiology Roadmap* (2013) by asking three central questions:

1. How does life begin and evolve?
2. Does life exist elsewhere in the universe?
3. How do we search for life in the universe?

Here is one point that matters: an astrobiologist cannot even think about a living microbe let alone an intelligent humanoid on another planet without thinking from within the framework of Charles Darwin's theory of evolution. Despite the absence of any empirical data, today's astrobiologist cannot proceed to conduct research without assuming that once life begins it evolves; and intelligent life is the product of a long period of evolving.

3.We are accustomed to political ideologies. In this context, a materialist ideology clings to science like moss to a wet rock. In either case, the public theologian should be quick to point out the risk of idolatry. 'Ideologizing so easily becomes idolizing. Ideologies in the sense of ideas and pictures of reality that are absolutist become idols that receive divine status and legitimation', is the alert offered by Nicco Koopman, Director of the Beyers Naudé Centre for Public Theology.

No public theologian can even grasp the issues let alone engage the issues apart from such an evolutionary framework. Emeritus Princeton professor Wentzel Van Huyssteen turns this challenge into an opportunity. 'I therefore believe that evolution, rightly understood, can enrich our religious faith considerably, and may actually set the stage for a friendly and rewarding "duet" between religion and science' (Van Huyssteen 1998:xvii).

The public theologian should sigh in contentment if Mark Pretorius and Dan Lioy are right. 'Science and religion are not in conflict', they assert. Then they add that 'an evolutionary worldview when discussing God's creative acts is, also, not in conflict with God's Word' (Pretorius & Lioy 2021). The public theologian, even when unavoidably plagued with doubts regarding the veracity of Darwinian theory, must, for the sake of merging horizons of understanding, take on Darwinian evolution as a working hypothesis. This hypothesis could become illuminating once contact with off-earth life is established.

Adopting the evolutionary framework has two advantages for the public theologian. Firstly, as just adumbrated, adopting the evolutionary framework makes it possible to join the astrobiologist in analysing any empirical evidence, which may be gathered. Secondly, the astrotheologian with an eagle eye may discern a supra-scientific ideology at work amongst some space scientists.

An extraterrestrial intelligence myth in the scientific orbit

As mentioned earlier, space inspires. Our mere awareness of the near infinity and mystery of outer space shocks our religious sensibilities. It provokes within us a sense of awe, magnificence and transcendence. Because what we know about outer space is taught to us by astrobiologists, does this make astrobiologists the priests who mediate transcendence? Is it possible that science could pick up spiritual valence? Yes, indeed. The astrotheologian is ready to expose this religious valence through discourse clarification. One supra-scientific stowaway hidden aboard the scientific rocket should be given a name: the *ETI myth*.

The ETI myth takes the form of an exportation of our terrestrial faith in progress to imaginary extraterrestrial sites. This belief in progress is a mutated variant of scientism and materialism. Here, the doctrine of progress is a secularised belief in divine providence pounded into the theory of evolution without remainder so that biological history now has an entelechy, direction and purpose. The doctrine of progress puts evolution's history and future on autopilot.⁴

To be sure, progressive evolution is a supra-scientific ideology; it is not sound science. Why? Because scientific

⁴The idea of progress has typically advanced three claims: (1) there are no fundamental limits on the human capacity to grow, however growth is defined; (2) advancements in science and technology foster improvements in the moral and political character of humanity; and (3) there is an innate directionality in human society, rooted in societal, psychological or biological mechanisms' (Dark 2007).

methodology routinely if not universally excludes teleology at the level of assumption. The world's leading evolutionary biologists decry any direction to evolutionary development. But space scientists still try to sneak it in under the tent flap.⁵

When the astrotheologian subjects the space sciences to discourse clarification, what becomes visible is widespread belief in the ETI myth. The ETI myth is not a story similar to those narrated by ancient myths of origin. Rather, the ETI myth is a set of conceptual sets that draw conclusions from a single premise: evolution is progressive. Space scientists have a special affection for the term, *advance*, which indicates that progress leads to something evermore superior. Here is the first of three subsets within the ETI myth:

The Advanced Science Subset

Evolution is progressive.

Evolution progresses from the simple to the complex.

Complex life evolves into intelligence over time.

Intelligence leads to science and technology.

Evolving life on exoplanets has progressed longer than it has on earth.

Therefore, ETI is more advanced than we on earth.

Are there scientists who actually believe this? Yes. Here is Harvard entomologist and sociobiologist, Edward O. Wilson: 'Given the multibillion-year age of the galaxy, the aliens reached our present-day, still-infantile level millions of years ago our technology would be vastly inferior' (Wilson 2014:54). Similarly, Arizona State University astrobiologist, Paul Davies, relies on the term, 'biological determinism', to introduce the myth. He writes:

[G]iven the right conditions, life inevitably will form after a sufficiently long time, and once life gets started, it will very probably progress toward intelligence.... Biological determinism is the prevailing philosophy at NASA, among SETI researcher, school children, journalists, and even the rich and famous. (Davies 2000:15)

What is the most intelligent creature on earth today? The scientist, of course. All of evolution has been guided by the singular purpose of producing the intelligent scientist. A longer time for evolutionary advance on an exoplanet would lead to...you guessed it!...a still more intelligent scientist. Implicit here is the belief that terrestrial scientists will play the role of shaman if not priest in communicating between heaven and earth or, more precisely, the heavens and earth.

In sum, evolution is guided internally by a *telos* that leads all life over time towards increased intelligence until it finally bows at the feet of the very scientist who is narrating this theory. The scientist becomes Point Omega, to borrow a term from Pierre Teilhard de Chardin. The myth-teller

⁵Global, long-term progress, amounting to the view that things in the biosphere are, in general, getting better and better and better, was denied by Darwin, and although it is often imagined by onlookers to be an implication of evolution, it is simply a mistake – a mistake no orthodox Darwinians fall for' (Dennett 1996:299).

becomes the apex of the myth. Similar to the myths of ancient Egypt that justified the kingship of the pharaoh, the ETI myth justifies the cultural kingship of today's scientist.

In ancient Babylonia's *Enuma Elish*, the king justifies his reign because he represents the god Marduk. And Marduk, according to the myth, slays the dragon, Tiamat. So also, today's scientist defeats a dragon. What dragon? The dragon is religion. Evolution destines science to triumph over religion over time. Here is a correlate subset:

The Outdated Religion Subset

Religion appears early in the evolution of intelligence.

Science appears later in the evolution of intelligence.

Science eliminates and replaces religion.

Therefore, more advanced aliens will be scientific and no longer religious.

Extraterrestrial intelligence that is more highly evolved than we earthlings will be more moral than us on earth because they will have outgrown religion and replaced it with science. This is the belief of astronomer Jill Tarter, former Director of The SETI Center for Research. 'Religions are responsible for the longest lasting warfare and destruction we have witnessed' (Tarter 2000a:45). We can be thankful that, as evolution marches on, moral science will replace immoral religion. 'Detected, long-lived extraterrestrials either never had, or have outgrown, organised religion' (Tarter 2000b:146). According to Tarter, a SETI astrobiologist has permission to believe in a myth replete with science-as-saviour. In Tarter's case, planet Earth will be saved from terrestrial religious violence by extraterrestrial science.

Some theologians also sing in the scientific choir. Here is the tune intoned by John Hart, cited here:

[I]n the vastness of space and over its eons of time, life on other worlds, too, might have evolved to be intelligent life. Extraterrestrial intelligent life (ETI) might be billions of years older than terrestrial intelligent life (TI) – and considerably more advanced biologically, intellectually, socially, and spiritually. (Hart 2014:20)

This brings us to the core tenet of the ETI myth, the belief in science-as-saviour:

The Science-as-Saviour Subset

Advanced science produces advanced technology.

Advanced technology produces weapons of mass destruction.

If an alien civilisation discovered a way to survive without self-destruction, that civilisation must also be morally advanced.

An extraterrestrial civilisation more advanced in science and more advanced in morality could help us on earth.

Therefore, future contact with a more advanced extraterrestrial civilisation will save us on earth from nuclear self-destruction and ecological self-destruction.

Advanced alien science leads inevitably to advanced morality and even saintliness, according to Davies (2010):

[T]here will be communities of beings who may have reached our stage of development millions of years ago. Those beings are likely to be far ahead of us not only scientifically and technologically, but ethically too. Quite possibly they will have used genetic engineering to eliminate grossly criminal or antisocial behaviour. By our standards they would be truly saintly. (p. 189)

Without the term, 'saintly', Cornell University's Carl Sagan and SETI's founder Frank Drake speculate that contact with extraterrestrials 'would inevitably enrich mankind beyond measure' (Sagan & Drake 1975:89). Interaction between less highly evolved terrestrials and more highly evolved extraterrestrials would result in our rescue from religious violence here on earth.

Here is the soteriology of the ETI myth: From the heavens alien salvation will come to earth with a more advanced science that will rescue us from self-demolition through a thermonuclear war or the destruction of our environment. If earthly science has not been able to save us yet, then heavenly science will save us in the future. So goes the ETI myth.

Obviously, the ETI myth has stolen Christian soteriology and fenced it to astrobiology. 'Our efforts to discover real ETs may have more to do with promoting a vision of salvation than with pursuing scientific investigation', is the judgement of evangelical theologian, Herrick (2008:72).

What the public theologian is doing here is making visible the partially hidden religious dimensions of the space sciences. In principle, there is nothing wrong for scientists to approach their subject matter with enthusiasm and high hopes. But, like overloading your Earl Grey with sugar and milk and strawberries so that the taste of black tea is smothered, the science in astrobiology gets smothered by a misinterpretation of evolution, the renunciation of religion, the hubris of science, a messiah complex and a projection on to aliens that would make both Feuerbach and Freud cringe.

What is being exposed by the hermeneutic of secular experience is how a secularised religious ideology has obscured the actual scientific knowledge produced by astrobiology and related space sciences.

The public theologian can easily point out how the rug is pulled out from under the ETI myth by evolutionary theory itself. The dominant view of evolutionary biologists is that biology is not progressive. There is no *telos*. Biology is not guided by purpose, design or direction.

One of America's leading evolutionary geneticists (Ayala 2017:571) opines: [N]o attempt to define progress as a purely biological concept has succeeded. It is fairly apparent that there is no standard by which *uniform* progress can be said to have taken place in the evolution of life.

The ETI myth cannot stand on its evolutionary leg. Nor can it stand on its empirical leg. To date, no empirical evidence exists that confirms the presence of either microbial life in the solar system let alone intelligent life on exoplanets.

Worse. For the astrobiologist to tell evolution's story – so that it appears that everything in nature is crowning today's scientist the king of intelligence on earth – is suspiciously self-serving, at the least. The bottom line is that the ETI myth cannot be supported by science. It is a supra-scientific stowaway. Hence, the astrotheologian's advice to the astrobiologist: *stick to good science and avoid practicing theology without a license*.

From the public theologian's point of view, the ETI myth is a temptation for idolatry. It risks putting our faith in science – either terrestrial or extraterrestrial science – instead of the God of grace:

[T]he 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, I believe, should look expectantly forward to meeting new space neighbours. Georgetown University theologian Haught (2012) looked forward to the challenge:

[A]n encounter with alternative intelligent worlds would be yet another great occasion for theology to benefit from the discoveries of cosmology and enlarge its sense of God and divine creativity. But contact with ET would also provide an opportunity for theology to display the unifying power of radical monotheism. (p. 165)

After all this has been said, let me confess that I applaud the exciting research pursued by astrobiologists and other space sockdolagers. I can only root for their success. And, I personally hope the ETI myth turns out to be true. Even though it has no scientific support, this myth inspires hope that our terrestrial future could be better than our past. It holds up a vision of a home planet without war and inhabited by creatures living in ecological balance. Without such hope, terrestrial civilisation will self-destruct on its own. Might God's Holy Spirit be speaking to the world obliquely through astrobiology?

Astroethics and public policy

When it comes to space exploration, science cannot proceed without ethics formulated as public policy. Can the astrotheologian cooperate with the astrobiologist along with others to make a contribution to public policy formulation? The astrotheologian brings to astroethics wisdom regarding human nature gained from centuries of mental hand ringing over the *imago Dei*, the fall into sin and transformation. With the symbol, *the new creation*, the astrotheologian brings visions of a future based on God's promise of a transformed nature. Might this wisdom offer something to ethical thinking on a cosmic scale?

The list of pressing issues is too long to cite here. Let me raise just one as a test case: if astrobiologists were to discover a microbial biosphere on Mars or a moon orbiting Jupiter or Saturn, would that life form hold intrinsic value? Utilitarian value? Or, no value? What are the implications of exploitation of off-Earth resources or even human settlements? (Peters 2018a).

Public discussion of this issue had already begun with Article IX of the 1967 UN Outer Space Treaty:

[P]arties to the Treaty shall pursue studies of outer space including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. (UN 1967)

The risk that prompts the UN's *Planetary Protection* policy is that the contamination of a home life form with an alien life form could lead to genocide.

The risk of contamination goes in two directions: forward and backward. The possibility of *forward contamination* alerts us to the risk of disturbing an already existing off-Earth ecosphere. The introduction of Earth's microbes carried by our spacecraft or equipment could be deleterious to an existing habitable environment. *Back contamination* would occur if a returning spacecraft brings rocks or soil samples that contain life forms not easily integrated into our terrestrial habitat. Life on earth would be put at danger should alien microbes be deleterious.

This prompts an ethical question that requires both theological and philosophical deliberation: should a life form discovered off-earth possess intrinsic value? Should earthlings be prohibited from invading that biosphere and risk contaminating it? If so, would this preclude space settlements on Mars or other heavenly bodies?

With the term, *intrinsic value*, astroethicist Mark Lupisella at NASA means, 'value that is truly independent of valuing agents' (Lupisella 2016:80). In simple terms, if an off-earth biosphere possesses intrinsic value, we dare not treat it as merely a means to our own ends. Intrinsic value suggests that we earthlings are morally obligated to protect that life from earth's contaminants and, further, to enhance its own evolutionary development and flourishing.

To put it simply, keep earth's hands off extraterrestrial life. But, obviously, such a moral mandate is too simple.

The very mention of intrinsic value might suggest Kantian deontological ethics, where moral maxims come in the form of laws. Practicing astroethicists, however, tend to work from within an axiological or teleological framework. Lund University space philosopher, Erik Persson (Persson 2021) says:

The theory about moral standing that initially seems most promising for granting moral status to any extraterrestrial life we might find in our own solar system would be biocentrism, a theory that grants moral standing to all life. (p. 302)

The astroethicist must grant intrinsic value, instrumental value or no value to each off-earth biosphere. Accordingly, public policy would prescribe the parameters for exploration, mining of off-earth resources and settlements.

Working together, Methodist theologian Richard Randolph and NASA astrobiologist Christopher McKay 'believe that new operational policies for space exploration and astrobiology research must be developed within an ethical framework that values sustaining and expanding [life's] richness and diversity' (Randolph & McKay 2014). Thus, the doctrine of intrinsic value has implications for Planetary Protection policy. Even more, it obligates earthlings to sustain and expand life's richness and diversity even in off-earth ecospheres.

Towards a galactic common good

The astroethicist must anticipate the future by proffering a possible if not likely scenario where earthlings share community space with microbial life forms within the solar ghetto and intelligent life forms in the wider Milky Way metropolis. I recommend that this projected vision draw upon the resources of the classic notion of the common good.⁶ It is time to envision a galactic common good.

Rudolf von Sinner already promotes 'global citizenship' by promoting 'the common good for the whole of society' (Von Sinner 2017:238). Might we broaden the horizon from a global to a galactic or even cosmic common good? Perhaps Koopman (2017) is ready to go cosmic:

[P]ublic Theology reflects upon the implications of the confession of the lordship of Jesus Christ for the life and for the life together in all public spheres, from the most intimate to the most social, global, and cosmic. (p. 161)

Theologian Hart (2019), already mentioned, develops the notion of the common good for our future interstellar community:

[C]osmographically, humanity will come to be at home not only on Earth but on diverse worlds among the stars and in different dimensions. In all places, people would come to share with other intelligent beings, congenially and collaboratively, common places in cosmos communities in the integral cosmos commons. (p. 246)

Cosmic commons is Hart's term for what I call the *galactic common good*. This moral vision forecasts the development of a cosmic community of life:

6. Pope Benedict XVI rests today's common good in God's eschatological transformation. 'In an increasingly globalized society, the common good and the effort to obtain it cannot fail to assume the dimensions of the whole human family, that is to say, the community of peoples and nations, in such a way as to shape the *earthly city* in unity and peace, rendering it to some degree an anticipation and a prefiguration of the undivided *city of God*' (Benedict XVI 2009).

[T]he envisioned cosmocommunity, currently an ideal, would be a cosmos relational community, characterized by beneficial relationships between humankind on Earth and humankind dispersed among settlements on distant worlds; among humankind in all places, with other living beings (including ETI and IDI) encountered in them; and with living beings' shared abiotic contexts. (Hart 2019:13)

In sum, the astrotheologian should offer to engage in interdisciplinary discernment regarding the ethical foundations for public policy. The public theologian would provide only one voice amongst others, to be sure. Yet, if the theologian's voice rings with authenticity, intelligibility and wisdom, it will get listened to. The public theologian just might hammer a needed nail into the globe wide public policy construction.

Conclusion

The purpose of this article has been to demonstrate the fact that astrotheology carries out one task assigned to the public theologian, namely to construct a theology of nature that is biblically based yet informed by science. Similar to a well-tilled garden, this theology of nature will burgeon forth with fruits to be harvested when engaging in discourse clarification and public policy formulation.

I have worked with the following assumption: *Public theology is conceived in the church, reflected on critically in the academy, and addressed to the world for the sake of the world* (Peters 2018c).⁷ Drawing on the hermeneutic of secular experience, the astrotheologian serves the world, so to speak, by exposing the partially hidden ETI myth. According to this myth, the long history of evolution is progressive; evolution progresses ineluctably towards increased intelligence, evolution has crowned today's scientist the king of intelligence and the myth hopes for the salvation of life on earth by a still more highly evolved ETI. Through discourse clarification, the astrotheologian can warn the public to guard against the idolatry of science and against placing hope in extraterrestrial salvation without any empirical evidence to support that hope.

In addition to discourse clarification, the astrotheologian can partner with scientists and philosophers in constructing an ethical foundation for building a space exploration policy. By discerning the implications of the debate over the intrinsic value of off-earth biospheres, astroethicists can make advanced plans for what we hope will be the discovery of microbial life within our solar ghetto and intelligent life elsewhere in the Milky Way metropolis. The public theologian can leaven the terrestrial loaf with a vision of a galactic common good.

Not every public theologian need take up the vocation of the astrotheologian, to be sure. Yet, the Christian church should

7. Public theology is for the sake of the world, not the church, according to John de Gruchy. 'Christian witness in secular democratic society means promoting the common good by witnessing to core values rather than seeking privilege for the Christian religion' (DeGruchy 2007:28).

fertilise its theology-of-nature garden with astrobiological knowledge so that just the right fruit will be ready to harvest when a scientific question that ‘matters’ is posed.

Acknowledgements

The author acknowledges Prof. J. Buitendag for the invitation to participate in and contribute to the collection of Theology and Nature.

Competing interests

The author declares that he has no financial or personal relationships that may have inappropriately influenced him in writing this article.

Author’s contributions

T.P. is the sole author of this article.

Ethical considerations

This article followed all ethical standards for research without direct contact with human or animal subjects.

Funding information

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Disclaimer

The views and opinions expressed in this article are those of the author and do not necessarily reflect the official policy or position of any affiliated agency of the author.

References

- Ayala, F.J., 2017, ‘Human evolution and progress’, in M. Tibayrenc & F.J. Ayala (eds.), *On human nature: Biology, psychology, ethics, politics, and religion*, pp. 565–575, Elsevier, Amsterdam.
- Barbour, I.G., 2006, ‘Indeterminacy, holism, and God’s action’, in T. Peters & N. Hallanger (eds.), *God’s action in nature’s world: Essays in honor of Robert John Russell*, pp. 113–128, Ashgate, Aldershot.
- Buitendag, J., 2020, ‘Grandeur in this view of life’, *HTS Theological Studies* 76(1), a6351. <https://doi.org/10.4102/hts.v76i1.6351>
- Chela-Flores, J., 2019, *Astrobiology and humanism: Conversations on science, philosophy, and theology*, Cambridge Scholars Publishing, Cambridge.
- Cleland, C. & Wilson, E., 2013, ‘Lessons from Earth: Toward an ethics of astrobiology’, in A. Spitz, W. Stoeger & C. Impey (eds.), *Encountering life in the universe*, pp. 17–55, University of Arizona Press, Tucson, AZ.
- Coakley, S., 2009, ‘Is there a future for gender in theology?’, *Criterion* 47(1), 2–8.
- Dark, T.E. III., 2007, ‘Reclaiming the future: Space advocacy and the idea of progress’, in S.J. Dick & R.D. Launius (eds.), *Societal impact of spaceflight*, pp. 555–571, NASA, Washington, DC.
- Davies, P., 2000, ‘Biological determinism, information theory, and the origin of life’, in S.J. Dick (ed.), *Many worlds: The new universe, extraterrestrial life, and the theological implications*, pp. 15–28, Templeton Foundation Press, Philadelphia, PA.
- Davies, P., 2010, *The eerie silences: Renewing our search for alien intelligence*, Houghton, Mifflin, Harcourt, Boston, MA.
- Deane-Drummond, C., 2009, *Christ and evolution: Wonder and wisdom*, Fortress Press, Minneapolis, MN.
- DeGruchy, J., 2007, ‘Public theology as Christian witness: Exploring the genre’, *International Journal of Public Theology* 1(1), 28–41. <https://doi.org/10.1163/156973207X194466>
- Dennett, D.C., 1996, *Darwin’s dangerous idea: Evolution and the meaning of life*, 2nd edn., Simon and Schuster, New York, NY.
- Gilkey, L., 1969, *Naming the whirlwind: The renewal of God-language*, Bobbs-Merrill, Indianapolis, IN.
- Hart, J., 2010, ‘Cosmic commons: Contact and community’, *Theology and Science* 8(4), 371–392. <https://doi.org/10.1080/14746700.2010.517637>
- Hart, J., 2014, *Encountering ETI: Aliens in avatar and the Americas*, Cascade Books, Eugene, OR.
- Hart, J., 2019, *Third displacement: Cosmobiology, cosmolocality, and cosmoecology*, Cascade Books, Eugene, OR.
- Haight, J., 2012, *Science and faith: A new introduction*, Paulist Press, New York, NY.
- Herrick, J., 2008, *Scientific mythologies: How science and science fiction forge new religious beliefs*, IVP Academic, Downers Grove, IL.
- Koopman, N., 2017, ‘Public theology in the context of nationalist ideologies: A South African example’, in S. Kim & K. Day (eds.), *A companion to public theology*, pp. 150–163, Brill, Leiden.
- Launius, R.D., 2013, ‘Escaping Earth: Human spaceflight as religion’, *Astropolitics: The International Journal of Space Politics and Policy* 11(1–2), 45–64. <https://doi.org/10.1080/14777622.2013.801720>
- Lupisella, M., 2016, ‘Cosmological theories of value: Relationalism and connectedness as foundations for cosmic creativity’, in J.S.J. Schwartz & T. Milligan (eds.), pp. 75–92, Springer, Switzerland.
- Mix, L.J., 2009, *Life in space: Astrobiology for everyone*, Harvard University Press, Cambridge, MA.
- Murphy, N., 2018, *A philosopher of the Christian religion for the twenty-first century*, SPCK, London.
- NASA, 2013, *Astrobiology roadmap*, viewed 30 July 2021, from https://astrobiology.nasa.gov/media/medialibrary/2013/09/AB_roadmap_2008.pdf.
- Nürnberg, K., 2015–2019, *Faith in Christ today: Invitation to systematic theology 2 volumes*, Fortress Press, Minneapolis, MN.
- Orobator, A.E., 2018, *Theology brewed in an African Pot*, Orbis, Maryknoll, NY.
- Persson, E., 2021, ‘The axiological dimension of Planetary Protection’, in T. Peters, J. Seckbach & R.G.O. Chon-Torres (eds.), *Astrobiology: Science, ethics, and public policy*, pp. 288–308, Wiley Scrivener, Singapore.
- Peters, T., 2011, ‘The implications of the discovery of extra-terrestrial life for religion’, *The Royal Society: Philosophical Transactions A* 369(2011), 644–655. <https://doi.org/10.1098/rsta.2010.0234>
- Peters, T., 2018a, ‘Does extraterrestrial life have intrinsic value?’, *International Journal of Astrobiology* 17(2), 1–7.
- Peters, T., 2018b, ‘Introducing astrotheology’, in *Astrotheology: Science and theology meet extraterrestrial life*, pp. 3–26, Cascade Books, Eugene, OR.
- Peters, T., 2018c, ‘Public theology: Its pastoral, apologetic, scientific, political, and prophetic tasks’, *International Journal of Public Theology* 12(2), 153–177. <https://doi.org/10.1163/15697320-12341533>
- Pope Benedict XVI, 2009, *Caritas in Veritate*, viewed n.d., from http://www.vatican.va/holy_father/benedict_xvi/encyclicals/documents/hf_ben-xvi_enc_20090629_caritas-in-veritate_en.html.
- Pretorius, M. & Lioy, D.T., 2021, ‘What do religion and natural science each have to say about origins, creation, and evolution?’, *HTS Theological Studies* 77(3). <https://doi.org/10.4102/hts.v77i3.6188>
- Randolph, R. & McKay, C., 2014, ‘Protecting and expanding the richness and diversity of life: An ethic for astrobiology research and space exploration’, *International Journal of Astrobiology* 13(1), 28–34. <https://doi.org/10.1017/S1473550413000311>
- Sagan, C. & Drake, F., 1975, ‘The search for extraterrestrial intelligence’, *Scientific American* 232(1), 80–89. <https://doi.org/10.1038/scientificamerican0575-80>
- Smit, D., 2017, ‘Does it matter?’, in S. Kim & K. Day (eds.), *A companion to public theology*, pp. 67–92, Brill, Leiden.
- Tarter, J., 2000a, ‘Implications of contact with ETI far older than humankind’, in A. Tough (ed.), *When SETI succeeds: The impact of high-information contact*, pp. 45–46, Foundations for the Future, Bellevue, WA.
- Tarter, J., 2000b, ‘SETI and the religions of the universe’, in S. Dick (ed.), *Many worlds: The new universe, extraterrestrial life and the theological implications*, pp. 143–149, Templeton Foundation Press, Philadelphia, PA.
- Tracy, D., 1984, ‘The role of theology in public life: Some reflections’, *Word and World* 4(3), 230–239.
- UN, 1967, *Outer space treaty*, United Nations, viewed 30 July 2021, from <http://history.nasa.gov/1967treaty.html>.
- Van Huyssteen, W., 1998, *Duet or duel? Theology and science in a postmodern world*, Trinity International, Harrisburg, PA.
- Veldsman, D., 2020, ‘Science’, in D.A. Forster, H. Jurgens, H. Dunday & B. Agang (eds.), *African public theology*, pp. 175–188, Langham Publishing, Carlisle.
- Von Sinner, R., 2017, ‘Public theology as a theology of citizenship’, in S. Kim & K. Day (eds.), *A companion to public theology*, pp. 231–250, Brill, Leiden.
- Wilkinson, D., 2013, *Science, religion, and the search for extraterrestrial intelligence*, Oxford University Press, Oxford.
- Wilson, E.O., 2014, *The meaning of human existence*, W.W. Norton, London.