Myth in the Heart of Science:

Evolutionary Progress as Myth in Astrobiology and UFOs

by

Ted Peters

Pacific Coast Theological Society, April 13-14, 2012

Abstract: When we define myth as an extra-scientific set of assumptions that picture the world in comprehensive or ultimate scope, then this term can help us uncover and identify myths lying at the heart of science. In particular, scientists working within the field of astrobiology frequently work with an evolutionary myth, a metanarrative that assumes biological evolution is progressive, leading to increased intelligence, to science, and to secular salvation both on Earth and elsewhere in outer space. Curiously, this myth is shared with UFO aficionados and the wider culture. This *ETI Myth* reflects a pre-modern religious impulse distorted in its modern secular disguise. Even if we encourage and celebrate the hard work of SETI scientists who are valiantly searching for new space neighbors, our diagnosis is that myth can be found in the heart of this science.

Key Terms: myth, astrobiology, SETI, extraterrestrial, UFO, ETI Myth, Gene Myth, evolution, progress.

Can we find myth right in the heart of science? Yes, at least in some sciences. The word *myth* can be helpful to use when trying to understand the overlap between laboratory science and cultural understandings of our human reality. This term is like a ceiling surgery light, shining down on the operating table to enable the surgical theologian to perform an intellectual biopsy.

I have frequently used the term 'myth' to illuminate certain ways that science and culture mutually influence one another. For example, I employed the term *gene myth* in the 1990s to describe the lens through which some scientists and much of the media looked at new knowledge gained by the Human Genome Project. When looking at the human genome through the lens of the gene myth, what we thought we could see was genetic determinism: human organisms dance to the tune of the genes like a puppet dances to the strings of the puppeteer. It's all in the genes! So, we thought.[1] When the genome project wound to a close early in the 21st century, we had learned that individual genes could produce multiple proteins in somewhat unpredictable ways. We also learned that our original estimate of a hundred thousand genes in the human genome was wrong; we have less than a third of that number. The idea of genetic determinism began to fade.

[1] Ted Peters, *Playing God? Genetic Determinism and Human Freedom* (London and New York: Routledge, rev. ed. 2002) 10.

We became almost conscious that the gene myth was in fact a myth, now a disproven myth.

The value of the gene myth's intellectual stock plummeted just in time for stock in the neurosciences to rally in support of a new version of biological determinism, neuro-determinism. My point a decade and a half ago was that belief in determinism functioned as an assumption rather than a conclusion, an assumption that governed our research programs and our interpretation of new discoveries. I still believe this.

Today, the fast moving frontier of the biological sciences has moved beyond genomics, at least for the most part. Are other myths operative? If so, what are these myths and how do they function in data interpretation?

Douglas Vakoch, a communications expert at SETI, and Albert Harrison, a consultant to NASA's space station program, lay down a challenge when they write, "myths require attention because of their great potential for influencing interpretations of extraterrestrial civilizations."[2] In this paper I will give myths attention. I will offer examining an example of myth in the heart of science: the ETI Myth in astrobiology and the UFO phenomenon.

Let me put my cards on the table at the outset. I am an enthusiastic aficionado of space research. I eagerly anticipate announcements of new discoveries. I hope extraterrestrial intelligent beings are discovered within my life time. What this paper attempts to do is more prosaic, namely, to uncover or disclose the role that extra-scientific thinking plays in the astrobiological research programme.

What is Myth?

What kind of myth do we find in the heart of science? More specifically, what is the myth at work in the science of astrobiology (the search for microbial life within our solar system combined with SETI, the Search for Extraterrestrial Intelligence Institute elsewhere in the Milky Way), and with its popular cultural cousin, the UFO phenomenon? I will call it the *ETI Myth*. This myth is a set of beliefs just barely articulated that frame our interpretation of both the scientific task to be pursued as well as our interpretation of any data we learn. The ETI Myth begins with an unfinished story, the story of the evolution of life on Earth and elsewhere in the cosmos. Although the origin of life is unknown to science, the history of past life forms appears to be knowable; and so does the future of life. The plot of evolution's story is a movement from the simple to the complex, from pre-intelligence to intelligence, from the stupid to the smart, from religion to science, and from evil to good. In short, within an evolutionary worldview we place our faith in progress; and progress promises a future salvation through science and technology. This underlying set of assumptions focalizes and frames and forms the way we look at outer space, especially the prospect that some day we might make contact with off-Earth living creatures. These assumptions are not themselves scientific; but they disguise themselves as scientific in order to inflate what is brutally empirical into a full blown worldview complete with a doctrine of salvation. These assumptions turn cold sticks into a warm nest. This, I suggest, is an example of myth at work in the heart of science.

[2] Douglas A. Vakoch and Albert A. Harrison, editors, *Civilizations Beyond Earth: Extraterrestrial Life and Society* (New York and Oxford, 2011) 10.

Is this the way Religious Studies scholars use the term 'myth'? No. "If number is the language of science, myth is the language of religion," writes Huston Smith.[3] It would seem that the concept of myth applies to religion, but not science. Let us pause to examine this assumption.

When engaged in study of the history of religions, I have found the work of Mircea Eliade most helpful in establishing an appropriate starting point.[4] Extrapolating upon his work, I operate with the following definition: a myth is a story about how the gods created the world (or a part of the world) in the beginning, *in illo tempore,* which explains why things are the way they are today. In brief, a religious myth is an etiological narrative that provides us with an understanding of the essence of the reality we experience. A cosmogonic myth is a big story that pictures the whole of reality and our place within it.

In this form, myth is archonic. Noting how the ancient Greek word *arche* means both origin (as in archaeology) and governance (as in hierarchy), myths capitalize on the human proclivity to assume that the origin of something determines its essence. By telling us how things originate, myths provide insights into essence. Classically, then, myths are stories about origin and provide the story teller with a degree of power over the reality being described.

We live in a modern culture, a secular culture that appears to have left religion behind. One item the modern worldview holds in common with the ancient Hebrew worldview is an implicit dissatisfaction with myth as archonic, an impatience with locating essence in the past. There is more to reality than just what the past can provide. We have a future, and with the future comes newness, essential newness. The God of the Bible does "new" things (Isaiah 43:19). The modern world relies upon technology which creates new things, things which have not previously existed. To refer to this reliance upon newness—whether a divine newness or human newness—I use the term 'epigenetic'. This word, *epigenetic,* is a combination of two Greek terms: one for *genesis* or beginning plus a prefix for after or again, *epi*. We may think of genesis as ongoing, as creative epigenesis.[5] What this implies is that the world of modern science will find it awkward to use the term 'myth' if it explains the present only in terms of what happened in the past. Therefore, if the term 'myth' is to illuminate contemporary science it will have to be adapted to a future orientation.

Once we have incorporated the future by pinpointing the role of progress, then we can turn to the comprehensive and ultimate dimensions of myth that are at work in our scientized culture. What do we mean here? Built right into human nature, contends Huston Smith, is a religious impulse. "I consider the religious impulse to be a part of the human makeup; the search for cosmic understanding is as much a part of the religious

---

[3] Huston Smith, *Why Religion Matters: The Fate of the Human Spirit in an Age of Disbelief* (San Francisco: Harper, 2001) 30.

[4] Mircea Eliade, *The Sacred and the Profane: The Significance of Religious Myth, Symbolism, and Ritual within Life and Culture* (New York: Harcourt, 1957) 95-99.

[5] My use of 'epigenetic' here differs from a common usage in sociobiology and an occasional use in genomics to refer to extra-genetic influences on gene expression. My usage is drawn from the work of biologist Jan C. Smuts, *Holism and Evolution* (Capetown: N & S Press, 1926, 1987) 9.

impulse as the search for cosmic belonging."[6] Smith's thirst for transcendence characterizes *homo religiosus,* the mode of human existence prior to the advent of *homo modernus,* modern secularized humanity.[7] The myths of yesterday's religions gave voice to our inner religious impulse. In the modern world, we've been told to shut up.

This search for a cosmic understanding so common to yesterday's religions has been stuffed under the rug by a modern culture loyal to science. Harvard geneticist Richard Lewontin, for example, tries to snuff out the religious impulse entirely. He wants to get the public "to reject irrational and supernatural explanations of the world, the demons that exist only in their imaginations, and to accept a social and intellectual apparatus, *Science*, as the only begetter of truth….Materialism is absolute, for we cannot allow a Divine Foot in the door."[8] If modernity is successful at stuffing down the religious impulse to search for cosmic understanding, then how will this human impulse come to expression? Through mythicizing science.

The atomized accumulation of empirical facts by our scientists does not quench the religious thirst still within us. Only a universal picture of reality wherein we find our home will do. So, we concoct disguised myths and label them 'science'. In the context of discussing sci-fi literature, James Herrick writes, "By *myth* I mean a transcendent story that helps us make sense of our place in the cosmos....because it is a story that gives ultimate meaning. We live in an age in which new myths, born mostly of science fueled imaginations, are crafted and propagated as an unprecedented rate."[9] I submit that the ETI Myth—actually a conceptual model about evolutionary progress—represents a displaced human desire for a comprehensive yet friendly cosmos.

Scientism and the Hermeneutic of Secular Experience

Science is our true savior, say the apostles of transhumanism. Author of a transhumanist manifesto, Simon Young, preaches that we should place our faith in science. "Science and technology increasingly offer us the chance to overcome the limitations of the human condition. Therefore, let us believe in science."[10] In the same vein, skeptic Michael Shermer makes it clear that scientism requires faith and thereby picks up religious freight. Scientism "is a secular religion in the sense of generating loyal commitments (a type of faith) to a method, a body of knowledge, and a hope for a better tomorrow."[11] One of scientism's critics is scientist Rustum Roy, who avers, "science-based Technology…is certainly the religion of America, and increasingly of the West, and incipiently of the whole world."[12]

---

[6] Huston Smith, *The Way Things Are: Conversations with Huston Smith on the Spiritual Life,* edited by Phil Cousineau (Berkeley: University of California Press, 2003) 96.
[7] Gregory D. Alles, "Homo Religiosus," *Encyclopedia of Religion, 1st Edition* edited by Mircea Eliade (16 Volumes: New York: MacMillan, 1987) 6:442-445.
[8] Richard Lewontin, Review of *The Demon Haunted World* by Carl Sagan in *New York Review of Books* (January 9, 1997).
[9] James A. Herrick, "Sci-Fi's Brave New World," *Christiantiy Today* 53:2:20-25 (February 2009)21.
[10] Simon Young, "Introduction," in *Designer Evolution: A Transhumanist Manifesto,* edited by Simon Young (Amherst NY: Prometheus Books, 2006) 16.
[11] Michael Shermer, *How We Believe: The Search for God in an Age of Science* (New York: W.H. Freeman and Co., 2000) 61.
[12] Rustum Roy, "Scientism and Technology as Religions," *Zygon*, 40:4:835-844 (December 2005) 837.

How should we dissect or analyze or understand scientism with its attempt to replace traditional religion? I suggest we employ Langdon Gilkey's *hermeneutic of Secular Experience.* Accordingly, Gilkey attempts "to see what religious dimensions there may be...in ordinary life...which will uncover what is normally hidden and forgotten."[13] This cultural hermeneutic "...seeks is to uncover...those aspects of daily experience which the secular mood has overlooked...there are levels latent in secular life of which our age is undoubtedly aware but about which it is unable to speak or to think intelligibly. These elements are the dimension of ultimacy presupposed in all our interaction with the relative world, and the presence of ambiguity within our freedom and creativity, of the demonic and the despairing in life as well as the joyful, with both of which secular experience is suffused."[14] In addition, belief in a salvific future in which evil is replaced with good brought about by science just might draw a theologian's attention.

Astrobiology and the Search for Extraterrestrial Intelligent Life (ETI)

Our target scientific fields will be those engaged in the search for extraterrestrial life, with a cocked ear toward the space sciences concerned with the possibility of a second genesis of both microbial and intelligent life. The Search for Extraterrestrial Intelligence Institute (SETI) along with NASA are the two principal research institutes in North America; but such explorations are being pursued by scientific teams in many parts of the world. As of this writing, NASA's Kepler telescope has identified a staggering 2,321 candidate planets orbiting stars elsewhere in the Milky Way. Only 69 have been confirmed. In addition to observing the shadow of a planet transiting in front of its star, this observation must be confirmed by instruments capable of measuring the star's wobble resulting from the suspected planet's gravitational pull.[15] At this stage, excitement is growing as knowledge is growing. Like exploratory drilling for oil, no one can predict when we will discover black gold.

Among the various space sciences, we will give special attention to astrobiology, in earlier times called *exobiology* or *bioastronomy*. Astrobiology is the scientific study of biological processes on Earth, and beyond.[16] For our purposes here we will connect the search for microbial life within our solar system with the search for intelligent life in extra-solar space. According to NASA's Christopher McKay, a Mars expert, "astrobiology has within it three broad questions that have deep philosophical as well as scientific import. These are the origin of life, the search for a second genesis of life, and the expansion of life beyond Earth."[17] McKay himself is searching for microbial life. The

---

[13] Langdon Gilkey, *Naming the Whirlwind: The Renewal of God-Language* (Indianapolis and New York: Bobbs-Merrill, 1969) 234.
[14] Ibid., 260.
[15] Eric Hand, "North set for mass analysis of planets," *Nature* 483:7361 (29 March 2012) 522-523.
[16] The University of Arizona in Tucson supports a department of astrobiological research. See: http://scienceandreligion.arizona.edu/project.html.
[17] Christopher McKay, "Astrobiology: The Search for Life Beyond the Earth," in *Many Worlds: The New Universe, Extraterrestrial Life, and the Theological Implications,* edited by Steven J. Dick (Philadelphia and London: Templeton Foundation Press, 2000) 45. The "second genesis" might turn out to be the first and "original genesis." The discovery of carbon-containing molecules composed of six to eleven atoms each elsewhere in the Milky Way suggests a readiness for life on a broad scale. "The discovery of

three most hospitable habitats within our solar system, in his judgment, are Enceladus, a moon orbiting Saturn; Europa, a moon orbiting Jupiter; and Mars, although life on Mars may have become extinct.[18] It might even be the case that life on both Mars and Earth are the result of a single genesis, not two; but life succeeded in the struggle for existence on Earth but not on the red planet. Our astrotheological concern here will be with the broad questions and their "philosophical" import.

The first question overlaps with and incorporates the subject matter of evolutionary biology: how does life begin and develop? "What does it take to create life from primordial soup?"[19] Some researchers believe RNA might mark an early stage in life's genesis; so they try to replicate RNA chemistry with imagined host environments. They are looking for sustainable replication. Let us ask: is this attempt to find the origin of life part of the theory of evolution?

Charles Darwin's model of evolution did not include the question of life's origin. It dealt solely with speciation, with changes in already living organisms. Astrobiologists seek the origin of life, whether on Earth or anywhere else. They are currently looking at other planets or moons for biosignatures such as methane or liquid water that could—allegedly--evolve into life. Such an astrobiological research aim is certainly legitimate, to be sure. Yet I ask: does pushing evolutionary theory beyond its own parameters to account for life's origin—to become a cosmogony—contribute to a mythicization of the evolutionary model?

The answer to the second question—does life exist anywhere else in this universe?—is being pursued at two levels. First, astrobiologists are looking within our solar system for microbial life, primitive life. Second, they are looking beyond our solar system yet still within the Milky Way for signs of extra-solar intelligent life. The Kepler telescope is looking for extra-solar planets, for transit shadows blocking a star's light. SETI. engages in radio astronomy—listening for electronic signals—as the main method for asking: are they out there? No longer can we scientifically expect that Martians or Venusians keep us company within our solar system. Any space neighbors will be light years away.

Astrobiology's third question is this: what is the future of life on Earth and beyond? This includes forecasts of exporting life from Earth to other locations in space; and it includes the interaction between life on Earth and elsewhere. All three of these questions occupy today's astrobiologists.[20]

Of special interest in this paper's inquiry is second genesis. Here astrobiologists search in space for astronomical conditions that could foster the emergence and development of life forms. They ask about the possibility that intelligent living creatures currently inhabit Earthlike planets somewhere in the cosmos. To date no direct empirical evidence exists that ETI exists. Despite more than three decades of active SETI research, no radio or microwave contact has occurred. OSETI (Optical Search for Extraterrestrial Intelligence), seeking biosignatures via laser detection, has similarly come up empty

---

biologically significant molecules in interstellar clouds of gas and dust could push life's history much farther back in time and out into space." Kathryn Garfield, "Did Life Begin in Space?" *Discover* (November 2006) 16.

[18] Heidi Ledford,"The Biological Higgs," *Nature* 483:7391: 528-530 (29 March 2012) 530.

[19] Cited in "Biological Higgs," 529.

[20] Albert A. Harrison, *Starstruck: Cosmic Visions in Science, Religion, and Folklore* (New York and Oxford: Berghan Books, 2007) 42.

handed. If we rely solely on empirical evidence, then we have no reason to believe that anyone else is out there.

Lack of empirical evidence does not end the story, however. Contact optimists can speculate. And speculate they do. Today's star searchers rely on a dramatic form of speculation known as the Drake equation. The *Drake Equation,* first formulated by Frank Drake in 1961 (National Radio Astronomy Observatory in Green Bank, West Virginia), looks like this:

$N=N^*f_p n_e f_l f_i f_c f_L$

N^* ≡ the number of stars in the Milky Way Galaxy.
f_p ≡ the fraction of stars with planets around them.
n_e ≡ the number of planets per star
f_l ≡ the fraction of planets in n_e where life evolves
f_i ≡ the fraction of f_l where intelligent life evolves
f_c ≡ the fraction of f_i that communicate
f_L ≡ the fraction of the planet's life during which communication happens
N ≡ the number of communicating civilizations in the galaxy.[21]

What star searchers gain from the Drake equation is not immediately the equivalent of N. Rather, what they gain is a template, an open window to frame what we are looking at out there. As research advances, new numbers can be plugged in. As we look beyond the Milky Way's 400 billion star systems, the scope expands enormously to 50 or maybe even a 100 billion galaxies. The size of our universe is astronomical, to repeat a pun. These big numbers lead former Vatican Observatory director George Coyne to tender that there are "10^{17} Earthlike planets in the universe."[22]

Possible corroboration for the Drake equation has been mounting since 1995, when the first extra-solar planet was found orbiting a star similar to our sun, 51 Pegasi. As technology improved to enable sky watchers to measure gravitational effects of suspected planets on their respective stars, so did the number of identified planets. These planets cannot be seen directly, but their gravitational pull can be detected by the wobble they cause on their star. In addition, optical observations have spotted transits, planets passing in front of their respective stars. Such evidence of nearly twenty-four hundred extra-solar planets is now in. As one might expect, larger planets have been discovered first; those already logged seem to be Jupiter sized objects orbiting quite close to their equivalent to our sun.

If such a planet is to support life, astrobiogists think, it must be more Earth-size, metal rich, and sufficiently distant from its respective sun in order to provide liquid water. "Habitability most probably requires a rocky surface with liquid water, which, in turn, demands a planet no bigger than two Earth radii on an orbit with a period of hundreds of days."[23] To fit within this biophilic range, such a planet should be like the porridge Goldilocks preferred to eat, not too hot and not too cold. A Goldilocks planet would find

[21] For the Drake Equation see: http://www.activemind.com/Mysterious/Topics/SETI/drake_equation.html.
[22] George V. Coyne, S.J., "The Evolution of Intelligent Life on Earth and Possibly Elsewhere: Reflections from a Religious Tradition," in *Many Worlds*, 180.
[23] John Southworth, "A New Class of Planet," *Nature* 481:7382:448-449 (26 January 2012) 448.

itself in a Circumstellar Habitable Zone (CHZ). And such a planet would need to remain stable and safe for a long period of time, perhaps years numbered in the billions.[24]

Are there any Goldilocks planets at all? Yes. On December 5, 2011, Kepler, NASA's planet hunting space telescope, identified a Goldilocks planet around a star much like our Sun, named Kepler 22b. Its radius is 2.4 times that of Earth at approximately 600 light years distant. But, what is important, is that the temperature is seventy degrees at its equator. A month later, January 11, 2012, researchers reported finding a planet the size of Mars orbiting a red dwarf star, KOI-961. Are there more just waiting for us to discover?[25]

This is the empirical evidence gathered so far. Now, just what does it mean? SETI's Frank Drake gives voice to speculations based on the prospect of contact. "Everything we know says there are other civilizations out there to be found. The discovery of such civilizations would enrich our civilization with valuable information about science, technology, and sociology. This information could directly improve our abilities to conserve and to deal with sociological problems—poverty for example. Cheap energy is another potential benefit of discovery, as are advancements in medicine."[26] Note how this speculation extends well beyond mere contact with ETI. It presupposes that an extraterrestrial civilization would be more highly evolved than what we are on Earth, and that ETI science will have progressed beyond ours. These achievements could help us on Earth by fixing what we have that is broken, such a poverty, energy insufficiency, and human health. In sum, extraterrestrial science will provide a modest salvation for us less highly evolved beings on Earth.

Evolution and the ETI Myth

A hermeneutic of secular experience helps us uncover a myth of evolutionary progress at work here, a non-empirical if not extra-scientific belief that orients the research program of at least ETI searchers. At work in contemporary culture and contemporary science, I argue here, is what I dub the *ETI myth*: the belief that extraterrestrial intelligent beings exist; at least some extraterrestrial beings are more advanced in evolution and technological progress; and, further, that when ETI share their advancements with us on Earth we will be healed and improved and made better. It is a belief without any direct empirical evidence. Yet, it is such a potent belief that it motivates research and interpretation of space phenomena. The ETI myth in its scientific

[24] What would be needed to see an Earth-sized extrasolar planet would be a telescope allowing scientists to see wavelength 1 X 10-10 times fainter than the star it orbits. Diffracted starlight must be suppressed to see the Earth-like planet. This could be accomplished with telescopes located in space. John T. Trauger, Wesley A. Traub, "A laboratory demonstration of the capability to image an Earth-like extrasolar planet," *Nature* 446: 7137 (12 April 2007) 771-773. Essential to life is liquid water; yet, the mere presence of water is not enough. Too much absorption of stellar electromagnetic radiation can limit if not eliminate the possibility of life, as can too little. John Raven, "Photosynthesis in watercolours," *Nature* 448:7152 (26 July 2007) 418. The interaction between a planet's sun and its water needs to be just right. It also needs a variant of the Goldilocks range.

[25] "Kepler Spies Smallest Alien Worlds Yet," *Science* 335:6066 (20 January 2012) 270.

[26] Cited by Diane Richards, "Interview with Dr. Frank Drake," *SETI Institute news,* 12:1 (First Quarter 2003) 5.

form posits the existence of advanced ETI, while the UFO extension of the myth adds that ETI are already visiting us.[27]

I have been emphasizing the decisive role played by the concept of evolution. Despite the controversy fueled by creationism and intelligent design, evolution has become so integrated into our culture that we all think from within an evolutionary paradigm. "The story of cosmic evolution [is] the metanarrative of educated people," observes Robert Bellah.[28]

No longer does the term *evolution* refer to speciation among living things, as it did for Charles Darwin. Now, it encompasses all that is real. It is this all-encompassing evolutionary worldview within which astrobiologists formulate their research agenda, according to Dick and Strick. "The idea of cosmic evolution implies a continuous evolution of the constituent parts of the cosmos from its origins to the present...the entire universe is evolving...all of its parts are connected and interact, and...this evolution applies not only to inert matter but also to life, intelligence, and even culture."[29]

Evolutionary assumptions are everywhere at work in astrobiology, especially in the search for ETI. "Everything evolves," is a cardinal SETI doctrine.[30] A corollary assumption is at work: the more highly evolved, the higher the moral value. Social Darwinist Herbert Spencer based his ethics on this assumption. "The conduct to which we apply the name good, is the relatively more evolved conduct; and that bad is the name we apply to conduct which is relatively less evolved."[31] Evolution implies progress and progress implies moral advance. So the logic goes.

We have already noted how some scientists attach the search for life's origin to the Darwinian theory of speciation. Now, I must recognize here that some form of natural selection seems to be operative at the level of pre-biotic chemistry. This could mean that when the chemical mechanism for life's origin is finally uncovered that it just might fit into the Darwinian model. The jury is still out.

As of this moment, no one knows how life originated; so its addition here walks and talks like an archonic mythicization. "Life is the product of deterministic forces," writes Nobel Laureate biologist Christian de Duve. "Life was bound to arise under the prevailing conditions, and it will arise similarly wherever and whenever the same conditions obtain. There is hardly any room for 'lucky accidents' in the gradual, multi-step process whereby life originated. This conclusion is compellingly enforced when one

---

[27] James A. Herrick uses the term "the Myth of the Extraterrestrials" to refer to "the idea that intelligent extraterrestrials exist and that interaction with them will inaugurate a new era in human existence." *Scientific Mythologies: How Science and Science Fiction Forge New Religious Beliefs* (Downers Grove IL: IVP Academic, 2008) 51.

[28] Robert N. Bellah, *Religion in Human Evolution from the Paleolithic to the Axial Age* (Cambridge MA: Harvard University Press, 2011) 45.

[29] Steven J. Dick and James E. Strick, *The Living Universe: NASA and the Development of Astrobiology* (New Brunswick NJ: Rutgers University Press, 2005) 9. This expansion of the Darwinian model of speciation to include the evolution of hte universe with its planets seems to date back to 1875 and the book by John Fiske, *Outlines of a Cosmic Philosophy Based on the Doctrine of Evoution.* Ibid., 11. It was the science fiction writers, not the scientists, who proffered the idea of cosmic evlution until the final third of the 20th century, when the Drake Equation presupposed it. The discovery of exo-planets in the 1990's seems to confirm the idea. To avoid the extravagance of this idea, Dick and Strick employ the term 'cosmic biological evolution:' to describe the actual research program of astrobiology. Ibid., 18.

[30] Edna Devore, "Voyages Through Time," *SETI Institute News,* 12:1 (First Quarter 2003) 7.

[31] Herbert Spencer, *The Data of Ethics* (New York: A.L. Burt Company, 1879) 28-29.

considers the development of life as a chemical process."[32] As long as the right chemical conditions exist somewhere in outer space—in a Goldilocks location--we can expect life to evolve and develop and progress. And, perhaps, some day we will meet this extraterrestrial life form. At the level of assumption—not conclusion--this evolutionary belief has worked its way into the ETI myth.

Building on the Drake equation mentioned above, de Duve speculates that "the figure of about one million 'habitable' planets per galaxy is considered not unreasonable. Even if this value were overestimated by several orders of magnitude, it would still add up to trillions of potential cradles for life. If my reading of the evidence is correct, this means that trillions of planets exist that have borne, bear, or will bear life. The universe is awash with life."[33] If such highly reputed scientists speculate without empirical evidence that the universe is teeming with life, it is easy to imagine how our culture could develop images of just what that life might be like.

The myth comes into sharper focus as de Duve continues. "My conclusion: We are not alone. Perhaps not every biosphere in the universe has evolved or will evolve thinking brains. But a significant subset of existing biospheres have achieved intelligence, or are on the way to it, some, perhaps in a form more advanced than our own."[34] When science becomes mythologized, we consider that our partners in outer space could be more highly evolved—"more advanced"—than we are.

Albert Harrison spells out what "more advanced" could mean. It means evolution leads us to a state of international peace, beyond war. "A fundamentally positive picture emerges when we extrapolate from life on Earth: there are trends toward democracies, the end of war, and the evolution of supranational systems that impose order on individual nation-states. This suggests that our newfound neighbors will be peaceful, and this should affect our decision about how to respond to them." [35] The proper decision, of course, will be for Earthlings to welcome their new space neighbors, because the spacelings may bring us gifts from our heavens. Such a soteriological belief constitutes an eschatological myth. "The signature of myth is always its happy ending," remarks Huston Smith.[36]

Cornell's Carl Sagan fully embraces the ETI myth. Co-authoring a *Scientific American* article with SETI's Frank Drake, he writes that contact with extraterrestrials "would inevitably enrich mankind beyond measure."[37] Still, Sagan recognizes that this hope is based on speculation rather than sufficient empirical evidence to deem it to be scientific. "I would guess that the Universe is filled with beings far more intelligent, far more advanced than we are. But, of course, I might be wrong. Such a conclusion is at best based on a plausibility argument, derived from the numbers of planets, the ubiquity

[32] Christian de Duve, *Vital Dust: The Origin and Evolution of Life on Earth* (New York: Basic Books, 1995) xv.
[33] Ibid., 121.
[34] Ibid., 297.
[35] Albert R. Harrison, *After Contact: The Human Response to Extraterrestrial Life* (New York and London: Plenum Press, 1997) 312.
[36] Smith, *Why Religion Matters,* 30.
[37] Carl Sagan and Frank Drake, "The Search for Extraterrestrial Intelligence, *Scientific American* 232 (1975) 80-89.

of organic matter, the immense timescales available for evolution, and so on. It is not a scientific demonstration."[38]

Physicist turned astrobiologist Paul Davies extends the ETI myth further in the direction of religion, by speculating about the spiritual superiority of our more advanced extraterrestrial colleagues. "It is clear that if we receive a message from an alien community, it will not have destroyed itself...it is overwhelmingly probable that the aliens concerned will be far more advanced than us....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."[39] Davies proceeds to engage in theological speculation based upon his assumptions regarding extraterrestrial superiority due to their more advanced stage in evolution. "It is a sobering fact that we would be at a stage of spiritual development very inferior to that of almost all of our intelligent alien neighbors."[40]

A tasteless concoction of progressive evolution and atheistic spirituality mixed with extraterrestrial gods simmer in a Richard Dawkins ETI stew. Even though Dawkins is a strong advocate of atheism, he grants that it would be "pardonable" for us to worship ETI. Why? Because advanced ETI will have progressed in their evolutionary development so far beyond us that they will appear god-like. "Any civilization capable of broadcasting a signal to over such an immense distance is likely to be greatly superior to ours….there are very probably alien civilizations that are superhuman, to the point of being god-like in ways that exceed anything a theologian could possibly imagine."[41] What is decisive for Dawkins is that god-like ETI are the fruit of evolution. Evolution creates; and god-like creatures are created by evolution. "The crucial difference between gods and god-like extraterrestrials lies not in their properties but in their provenance. Entities that are complex enough to be intelligent are products of an evolutionary process."[42] Dawkins is a materialist; so he is able to ascribe divinity to the highest rank of material beings he can think of, namely, more evolutionarily advanced intelligent beings. This amounts to a secularized spirituality, a materialist religiosity.

Davies is a deist and Dawkins an atheist, but these commitments are not what is at stake here. What is at stake is that this very view of extraterrestrial life carries with it a religious valence, a human hope that in previous generations was expressed in religious symbols. "We cannot avoid the connection between SETI and religion, although many

---

[38] Carl Sagan, *Pale Blue Dot: A Vision of the Human Future in Space* (New York: Random House, 1994) 33. Sagan speculates not only about the scientific advances of ETI, but also wonders what might happen if visiting ETI would find human beings delicious to eat. "Why transport large numbers of us to alien restaurants? The freightage is enormous. Wouldn't it be better just to steal a few humans, sequence our amino acids or whatever else is the source of our delectability, and then just synthesize the identical food product from scratch?" Ibid., 353. Sagan developed his own science based atheism, a view quite similar to that of Richard Dawkins. SETI scientist Seth Shostak observes, "Sagan is sharpening the logical tools he wields to address the matter of God's existence. How plausible is the premise? How convincing is the evidence?" "Carl Sagan and the Science of God," *Discover* (November 2006) 69. It seems these "logical tools" apply more strictly to the question of God's existence than to the question of ETI's existence.

[39] Paul Davies, *Are We Alone? Implications of the Discovery of Extraterrestrial Life?* (New York: Penguin Books, 1995) 32-33

[40] Ibid., 33.

[41] Richard Dawkins, *The God Delusion* (Boston and New York: Houghton Mifflin Company, 2006) 72.

[42] Ibid., 73.

SETI advocates wish that we could," writes Michael Michaud. "Religion in a universal sense is the never-ending search of each civilization for others more superior; the major difference in this case is that the intelligence is not supernatural."[43]

NASA historian Steven J. Dick hits the nail on the head with his insightful observation. "As a search for superior beings, the quest for extraterrestrial intelligence is itself a kind of religion."[44] Religion in the heart of science.

"Today, ancient myths are reemerging with a scientific spin and cloaked in space-age garb," writes Albert Harrison. "Thus, rather than subject to God's scrutiny, we are watched by naturally evolved entities whose level of intelligence is beyond our ken...we are visited by humanoids that drive advanced spacecraft and wear shiny spacesuits."[45] The ETI Myth includes both astrobiology and the UFO phenomenon, unfriendly siblings though they may be. Harrison uses the term *cosmism* to refer to this new religion of space worship. 'Carl Sagan and Neil deGrasse Tyson are high priests, astronauts are like saints that ascend into heaven, and extraterrestrials are as gods -- benevolent, wise, and capable of manipulating space and time."[46]

A particularly vitriolic denunciation of SETI because of its religion and myth is enunciated by Lewis White Beck. Under the banner, *Exiobiology recapitulates eschatology,* he writes, "Myth, religion, and now science-fiction with their tales of benevolent and malevolent extraterrestrial beings are commentaries on the human condition. I believe even responsible scientific speculation and expensive technology of space exploration in search for other life are the peculiarly modern equivalent of angelology and Utopia or of demonology and apocalypse."[47]

Right along with an eschatological hope for a beneficent extraterrestrial utopia, the ETI Myth we see developing here includes a story of origin: wherever in space the right chemicals are present then life will emerge. The myth includes a virtual alpha and omega. Between the alpha origin and the utopian eschatology lies the doctrine of progress. None of these are empirically grounded; yet they motivate and guide scientific research.

Is Evolution Really Progressive?

The idea of progress belongs to the cultural myth of modernity, especially the American version of the myth. According to Taylor E. Dark III, "the 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)

---

[43] Michael A.G. Michaud, *Contact with Alien Civilizations* (New York: Springer, Copernicus Books, 2007) 202.
[44] Steven J. Dick, *Life on Other Worlds: The 20th Century Extraterrestrial Life Debate* (Cambridge UK: Cambridge University Press, 1998) 253.
[45] Harrison, *Starstruck,* 6.
[46] See the interview with Albert Harrison by Ross Anderson, "The Holy Cosmos: The New Religion of Space Exploration, *The Atlantic* (March 29, 2012) http://www.theatlantic.com/technology/archive/2012/03/when-the-saints-go-blasting-off-space-exploration-as-religion/255136/ (accessed 3/30/2012).
[47] Lewis White Beck, "Extraterrestrial Intelligent Life," in *Extraterrestrials: Science and Alien Intelligence*, ed. by Edwsard Regis, Jr. (Cambridge UK: Cambridge University Press, 1985) 3-18: 13.

there is an innate directionality in human society, rooted in societal, psychological, or biological mechanisms."[48] Note here how advances in science and technology lead to improvements in our moral and political character. And note also the reliance upon a mechanism, in our case reliance upon biological evolution to provide the innate directionality.

Now let us ask: is evolution inherently progressive? Yes, says Davies using the term *biological determinism*. "Given 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 researchers, school children, journalists, and even the rich and famous."[49]

Note how the assumptions pile up on each other. The first assumption is that in a Goldilocks niche, life will begin. The second assumption is that evolution is progressive: given enough time intelligence will emerge and, given more time, increase. The next assumption is that this intelligence will lead inevitably to science and technology. Hidden in this pile is another assumption, namely, religion is less highly evolved and science is more highly evolved. Science replaces religion over time. As we look forward to Earth's future—a future already present on some other planets—we will see that science will take over all the jobs that religion had previously performed, including prophesying salvation.

Scientific Debates, Progress, and the ETI Myth

Is it scientific to assume that wherever we find a Goldilocks niche that life will begin? Or, that, once life has begun, it will progress toward intelligence, science, and technology? No. Or, at least it is questionable.

First, let us remind ourselves: the genesis of life is not in itself a part of the theory of Evolution. Charles Darwin said repeatedly he had no idea how life began. Scientists a century and a half later still don't. The theory of evolution is a theory of speciation, not a theory about origins. The title of Darwin's landmark book of 1859 makes this clear: *On the Origin of Species,* not the origin of life.

Second, if we were to poll evolutionary biologists, the vast majority would reject if not condemn belief in evolution as progressive. No inner entelechy or trajectory leading organisms toward intelligence exists. It's not there.

One implication is that even if we were to find a Goldilocks planet, it does not follow that life will have originated there. And, even if life did originate there, there is no scientific reason to assume that this alien life has embarked on an evolutionary story that leads to intelligent beings like us let alone superior to us. Astrobiological speculation is by no means falsified by this; but it has surprisingly little or no foundation in evolutionary biology.

This leads to the *unique Earth* or *rare Earth* position. Alfred Wallace (1823-1913), co-discoverer with Charles Darwin of the role played by natural selection in

[48] Taylor E. Dark III, "Reclaiming the Future: Sapce Advocacy and the Idea of Progress" in *Societal Impact of Spaceflight,* edited by Steven J. Dick and Roger D. Launius (Washington DC: NASA SP-2007-4801, 2007) 555-571: 555.

[49] Paul C.W. Davies, "Biological Determinism, Information Theory, and the Origin of Life," in *Many Worlds,* 15.

evolution, belongs to the rare earth club. Wallace is aware of the contingencies of evolutionary change, dependent on unique interactions between inheritance and specific environmental niches. This means evolution could not repeat itself, either on earth or anywhere else in space. Even if life begins on another planet, it is virtually impossible for it to duplicate the production of an intelligent species like humanity. In his 1904 book, *Man's Place in the Universe,* Wallace reports, "I submit, therefore that the improbabilities of the independent development of man, even in one other world—and far more in thousands of millions of worlds, as usually supposed—are now shown to be so great as to approach very closely, if not quite to attain, the actually impossible."[50]

A century later we find evolutionary biologist Francisco J. Ayala making the same case. When Ayala poses the question regarding the possible existence of ETI, he says, "My answer is an unequivocal 'no'." Why such a strong opposition to contact optimism? Because what has happened in our planet's evolutionary history has been contingent, not guided by an internal purpose or entelechy. Ayala argues that if we on Earth were to replay "life's tape" from the beginning of life to the present, the course of evolution would not repeat itself. According to the existing evolutionary history, for the first two billion years only microbes existed on Earth. The eucaryotes were the first organisms whose cells have a nucleus containing DNA; and, adds Ayala, there is nothing in the process that would make it likely that multicellular organisms would evolve. Evolution could have stopped right there. No animals might have come into existence. "We know that animals evolved only once. So, there is little likelihood that animals would arise again, if life's tape were replayed."

The phenomenon of extinction plays a big role in Ayala's argument. He notes that 99% of Earth's species are now extinct. Five hundred thousand years ago most animal species had already become extinct; and their body plans would no longer be represented just one hundred million years later. Only one lineage gave rise to the vertebrates: animals with backbones, including fishes, amphibians, reptiles, birds and mammals. Even if the low probability event of the evolution of animals would be repeated, we have no reason to expect that animals with backbones would evolve. What follows is a virtually infinite improbability that primates would arise again, let alone hominids and *homo sapiens*.

In each chapter of the evolutionary story, we find a long concatenation of contingent if not unique events. We find millions of random mutations and environmental circumstances, all points where the history could have taken a different turn. The probability of a repeat of this history is so low as to be virtually nil. The evolutionary process would produce a different outcome every time it gets going. Ernst Mayr puts it this way: "At each level of this pathway there were scores, if not hundreds, of branching points and separately evolving phyletic lines, with only a single on in each case forming the ancestral lineage that ultimately gave rise to Man.[51]

The Drake equation would be equally unpersuasive to Ayala, because the improbabilities of a repeat of our evolutionary progress are greater than the probabilities

[50] Cited in Crowe, 436.
[51] Ernst Mayr, "The probability of extraterrestrial intelligent life," in *Extraterrestrials: Science and Alien Intelligence,* ed. by Edward Regis, Jr. (Cambridge UK: Cambridge University Press, 1985) 23-30: 27.

of communicating intelligent life coming into existence. If we "replay life's tape," the improbabilities get multiplied from year to year, from generation to generation, millions and millions of times. "The resulting improbabilities are of such magnitude that even if there would be millions of universes as large as the universe that we know, the products (improbability of humans x number of suitable planets) would not cancel out by many orders of magnitude. The improbabilities apply not only to *homo sapiens*, but also to 'intelligent organisms with which we could communicate'; by this phrase I mean organisms with a brain-like organ that would allow them to think and to communicate, and with senses somewhat like ours (seeing, hearing, touching, smelling, tasting) which would allow them to get information from the environment and to communicate intelligently with other organisms. We have to conclude that humans are alone in the immense universe and that we forever will be alone."[52]

Such reasoning regarding contingencies in evolution lead Ernst Mayr, among others, to say that SETI is very likely to fail in achieving contact.[53] Mayr minces no words. "The SETI program is a deplorable waste of taxpayers' money, money that could be spent far more usefully for other purposes."[54] Let me interpolate here my own judgment: despite this criticism of SETI's assumptions, I still support the work of SETI for two reasons. First, even if unlikely, it is still possible for us to discover ETI. Secondly, the very performance of the research leads to a great deal of knowledge of space we would not otherwise have. In addition, SETI is now supported by private funds, not taxpayer money. Now, back to the argument.

Like Ayala, John Maynard Smith emphasizes the contingent and accidental appearance of the life forms we see on Earth. Should evolution begin once again here or elsewhere, "there is no guarantee—indeed no likelihood—that the result would be the same."[55] In other words, the likelihood that evolution on an extraterrestrial planet would lead to intelligent life similar to our own is virtually nil.

The unique Earthers are not alone, however. A minority position is taken up by, Simon Conway Morris, who argues that evolution would always follow a somewhat predictable track leading toward intelligent beings such as ourselves. "The emergence of human intelligence is a near-inevitability."[56] Morris bases his speculation on the history of convergence in Earth's evolutionary past. "Convergence is ubiquitous, from molecules to social systems. In fact, the study of convergence reveals a deep structure to life. This strongly suggests that what is true on Earth is true anywhere....So, out there as and when we meet the aliens...the first will be bipedal and intelligent."[57]

---

[52] Quotes here taken from Francisco J. Ayala, "The Evolution of Life on Earth and the Uniqueness of Humankind." in: S. Moriggi and E. Sindoni, eds., *Perché esiste qualcosa invece di nulla? (Why There Is Something rather than Nothing?)* (ITACAlibri: Castel Bolognese, Italy, 2004), 57-77 .

[53] Ernst Mayr, "Can SETI Succeed? Not Likely," http://www.planetary.org/explore/topics/search_for_life/seti/seti_debate.html. On this SETI website Carl Sagan argues for an "Abundance of Life-Bearing Planets." Ibid.

[54] Mayr in Regis, 29.

[55] John Maynard Smith, "Taking a Chance on Evolution," *New York Review of Books* (14 May 1992) 34.

[56] Simon Conway Morris, *Life's Solution: Inevitable Humans in a Lonely Universe* (Cambridge: Cambridge University Press, 2003). xii. Even with this premise, environmental conditions restricting the likelihood of a Goldilocks planet means, "life may be a universal principle, but we can still be alone." Ibid., 105.

[57] Simon Conway Morris, "Not So Alien," *SETI Institute News,* 12:1 (First Quarter 2003) 10-11.

Despite what Morris says, the view regnant among evolutionary biologists is articulated by Ayala: "The overall process of evolution cannot be said to be teleological in the sense of proceeding toward certain specified goals, preconceived or not."[58] Philosopher of Biology Michael Ruse adds: "There is absolutely no guarantee of an upward progression on our hypothetical planet to intelligent life forms....evoluton of intelligence is not a necessary consequence of life appearing: not at all."[59] If this argument holds, then the ETI Myth hangs on a thin thread of utter chance rather than the firm rope of evolutionary progress.

Ambiguity in Scientific Progress and Evolving Morality

We know what technological progress is. We've seen it over the last few centuries. We rely upon it. It exists. Can we expect to find progress wherever we find the evolution of life? Is intelligence inevitable? We have just asked: is nature apart from humanity progressive? The consensus among evolutionary biologists is: no. Next comes the question: can we be confident that as we evolve further, become more intelligent and advance in science that we will proportionately advance in moral judgment, care, justice, and peace? No, because scientific or technological progress has no counterpart in moral progress.

Here is the problem. "Contact optimists often assume that more advanced extraterrestrials will treat us benignly. Technologically superior aliens, many argue, will have evolved past the warlike behavior we have seen in our own species," observes Michael Michaud. However, this is a belief without earthly corroborating evidence. "The human example provides no support for such optimistic statements."[60]

Reflecting on two world wars, the neo-orthodox theologians—Reinhold Niebuhr, Paul Tillich, and Langdon Gilkey--describe science as ambiguous. We human beings are capable of moral greatness and also moral degradation. With every advance in science and technology comes a proportional advance in the effectiveness of wreaking havoc and destruction. Science gave us bombs so that more and more people could suffer and die. The genocide of the Nazi holocaust took place within the context of highly developed science and technology. Huston Smith vituperates on this issue. "Modernity went on to predict that technology would ensure unending progress. Endless progress through the technological application of continuous scientific discovery—this is what modernity's scenario comes down to. And because it was founded on an illusion (the illusion that the scientific method is omnicompetent) it was inevitable that sooner or later it would bump into reality—in this case, history. And it now has, with a vengeance. The twentieth century, the most barbaric in history, makes the myth of progress read like a cruel joke: 160 million human beings slaughtered by their own kind."[61]

---

[58] Francisco J. Ayala, "Darwin and the Teleology of Nature," in *Science and Religion in Search of Cosmic Purpose,* edited by John F. Haught (Washington DC: Georgetown University Press, 2000) 34.
[59] Michael Ruse, "Is Rape Wrong on Andromeda? An Introduction to Extraaterrestrial Evolution, Science, and Morality," in *Extraterrestrials: Science and Alien Intelligence,* edited by Edward Regis, Jr. (Cambridge UK: Cambridge University Press, 1985) 50.
[60] Michael A.G. Michaud, *Contact with Alien Civilizations* (New York: Springer, Copernicus Books, 2007) 304.
[61] Huston Smith, *The Soul of Christianity* (San Francisco: Harper, 2005) xvii.

A century ago Christian theologians were already wrestling with the empty promises of belief in progress. Liberal Protestant Harry Emerson Fosdick, for example, argued that the concept of sin provides a more realistic conceptual model for understanding the human condition. "This evolving cosmos has been pictured as a fool-proof world where men could make and love their lies, with their souls dead and their stomachs well alive, with selfish profit the motive of their economic order and narrow nationalism the slogan of their patriotism, and where still, escaping the consequences, they could live in a progressive society….All the progress this world will ever know waits upon the conquest of sin. Strange as it may sound to the ears of this modern age, long tickled by the amiable idiocies of evolution popularly misinterpreted, this generation's deepest need is not these dithyrambic songs about inevitable progress, but a fresh sense of personal and social sin."[62] And, "This world needs something more than a soft gospel of inevitable progress. It needs salvation from its ignorance, its sin, its inefficiency, its apathy, its silly optimisms and its appalling carelessness."[63]

Not only is the ETI myth weak because of its reliance on the doctrine of progress embedded in evolutionary biology; it is also mistaken in its reliance on a single path of science toward social redemption. We will see these mistakes again as we turn to the UFO Myth.

Illuminating the UFO Myth

Using the concept of myth like a ceiling light again, I believe we can further illumine the mythological role extraterrestrials play in our culture as well as in science by probing the UFO phenomenon, by examining the belief system surrounding the sighting of flying saucers.[64] Many research scientists are repelled at the prospect of comparing their assumptions with those of UFO believers, of course. They wish to protect pure science from pollution by pseudo-science and mass hysteria. Yet, we must proceed to probe these two in tandem if we are going to understand just how the scientific mindset influences our culture, and vice versa. In what follows, we will not evangelize for belief in UFOs or in extraterrestrial visitation. Rather, we will study what people believe when they believe that UFOs come to us courtesy of extraterrestrial civilizations. What is significant is that the assumptions of both UFO aficionados and SETI researchers converge in the formation of a single worldview. This worldview is what I refer to with the term 'myth'.

The ETI myth in both its astrobiological and UFO variants functions within an evolutionary worldview replete with the doctrine of progress and reverence for

[62] Harry Emerson Fosdick, *Christianity and Progress* (New York and London: Fleming H. Revell Company, 1922) 175.
[63] Ibid., 40.
[64] We need to distinguish sharply between the UFO phenomenon and science fiction. They are not the same. They rarely overlap. Their respective articulations of cultural sensibilities differ. In the 1950s, science fiction lifted up the cold war by describing interstellar aliens as hostile enemies to be defeated, on the model of the struggle between the West and the Soviet Union. In contrast, the growing number of UFO believers viewed extraterrestrial aliens as neutral if not benevolent visitors who could save us on planet Earth from self-destruction. Only two major movies offered an authentic presentation of the UFO phenomenon, *The Day the Earth Stood Still* (1951) and *Close Encounters of the Third Kind* (1977).

intelligence, science, and technology. The suppressed religious thirst for ultimate meaning in a comprehensive view of the universe gets quenched with the nectar of the gods become extraterrestrial aliens.[65]

Note the logic inherent in observations made by two political science scholars writing on the UFO phenomenon. "If the law of increasing complexity is correct then intelligent life might actually be common in the universe."[66] Here, convergence or progress toward complexity is presumed to be a law of nature. More. "ETs might have vastly superior intelligence, literally 'above' human rule, and thus be sovereign deciders in their own right."[67] From beneath the secular language Gregory Reece lifts up the hidden religious meaning. "Like the old gods they came from above, from the starry heavens. Like the old gods they bring warnings and promises. Unlike the old gods, however, they are human....the new gods of the [UFO] contactees give us reason to believe that we can better, that we can be gods, that we can live among the stars."[68]

The word *myth* actually surfaces in the UFO study of Charles Ziegler. "A myth is, among other things, a narrative that deals with a transcendental issue such as why and how the world and humankind came to be in their present form, the role of unearthly beings in human affairs, and the like; and it is a narrative that some people within society say they find credible. In short, [myth believers] constitute a subculture."[69]

The UFO myth predated the current scientific version of the ETI myth. Even so, the latter is more conservative than the former. Astrobiology claims less. What the UFO myth adds is contact. As a phenomenon, what the UFO experience entails is a combination of objective appearance and subjective appropriation. To examine the UFO phenomenon is more than merely asking whether flying saucers are real or whether our Earth is being visited by interplanetary travelers. It deals with what UFO witnesses perceive and how they interpret what they perceive. It deals with the entire UFO experience, from mere sighting to UFO research organizations to the establishment of UFO religious movements.

The UFO myth provides a comprehensive worldview or metanarrative, shot through and through with evolutionary progress. Whether a flying saucer report is a simple sighting of a daylight flying disc or a close encounter with an alleged alien being from an extraterrestrial world, the witness tries to explain the experience in terms of a worldview that makes sense. The UFO myth goes like this. Life has originated and evolved on a distant Earth-like planet and followed a path of evolution similar to our own. However, this alien life began earlier, and has had more time to evolve. Inherent in such evolution is progress. This means that the alien civilization in question has progressed further than we have. It is more advanced than ours. This is demonstrated because aliens have developed the technology for space communication or even space travel that we

---

[65] I first developed the mythical framework for analyzing the UFO phenomenon in a book, *UFOs—God's Chariots? Flying Saucers in Politics, Science, and Religion* (Everett WA: Wittenberg Workshop, 2011).
[66] Alexander Wendt and Raymond Duvall, "Sovereignty and the UFO," *Politcial Theory* 36:4:607-633 (August 2008) 616.
[67] Ibid., 624.
[68] Gregory L. Reece, *UFO Religion: Inside Flying Saucer Cults and Culture* (London and New York: I.B. Taurus, 2007) 200.
[69] Charles A. Ziegler, "Mythogenesis," in *UFO Crash at Rosewll,* by Benson Saler, Charles A. Ziegler, and Charles B. Moore (Washington DC: Smithonian Institution, 1997) 2.

have not yet developed. In a sense, the space visitors are our own future coming back to visit us. And, if the space visitors bring their more advanced technology and perhaps even their more advanced spirituality, they can help us on Earth heal our maladies. Today's extraterrestrials piloting flying saucers replace yesterday's angels. They become celestial saviors.

Both UFO experiencers and aficionados live within this worldview. Theologian John Saliba describes it this way: "The meaning of the flying saucer phenomenon might lie more in its social and psychological dimensions than in whether extraterrestrials exist or not, or in what the aliens themselves are supposedly saying and doing. In other words, belief in flying saucers and alleged encounters with their occupants might reveal something important about human nature."[70] In the UFO phenomenon, pre-modern religious impulses become sublimated into modern and secularized expressions within the scientific parameters for understanding reality.

The Scientific Context for the UFO Myth

On the one hand, science saves. Advances in medical science have so improved human physical wellbeing that doctors are often called 'gods'. On the other hand, science destroys. Atomic weapons destroy entire cities, killing all their inhabitants. Science is morally ambiguous. We live in this tension. Within the ETI myth, especially the UFO variant, we can perceive a thrust to resolve the tension, an inchoate desire to make science only our savior. How does this work?

The tension was between power and goodness. Scientists brought power. "Since the bomb exploded over Hiroshima, the prestige of science in the United States has mushroomed like an atomic cloud," wrote Martin Gardner in 1952.[71] Science represented power. Yet, if America's power precipitated a Soviet pre-emptive or retaliatory strike, the U.S. would undergo a destruction worse than what Europe underwent only a half decade prior. Would safely lie in more science or in political control of science? No one knew.

Enter the flying saucer immediately following World War Two when the world was trembling in fear over the nuclear arms race. This cold war anxiety included fear that political leaders were too inept to deal with the magnitude of the problem. Blinded by nationalism and jingoism, it was feared that one or another leader would hastily drop a bomb that would result in an uncontrollable retaliatory exchange. The result would be global self-destruction. Kenneth Arnold's cockpit sighting of nine flying discus near Mount Rainer in Washington took place in 1947, and a new era for interpreting the nuclear threat was born.

The logic of the new interpretation went like this:: if our visiting aliens themselves went through a period of developing nuclear power and successfully avoided self-destruction, perhaps they can teach us on Earth how to establish peace and avoid the threat of nuclear self-annihilation. What the space voyagers can bring to us is peace on

[70] John A. Saliba, "UFO Contactee Phenomena from a Sociopsychological Perspective: A Review," *The Gods Have Landed: New Religions from Other Worlds*, edited by James R. Lewis (Albany NY: SUNY, 1995) 241.

[71] Martin Gardner, *Fads and Fallacies in the Name of Science* (New York: Dover, 1952, 1957) 3. Gardner analyzes the UFO phenomenon, dismissing it as hysteria. What Gardner does not recognize is the cultural connection between UFO beliefs, evolution, and the prestige of science.

Earth, won through the advances of extraterrestrial science. Science, in its extraterrestrial and futuristic form, will become our savior.[72] Would this be a salvation by science or from science? It would be salvation from a higher science, a more highly evolved science.

In the post-war period science could also claim another virtue. The scientific community crossed national boundaries. Scientists communicated with one another regardless of national loyalties. Could a confederacy of scientists representing different nations do what political leaders could not by themselves do, namely, provide an international institution for arms control? Could these broad-minded geniuses overcome their narrow-minded political leaders and provide a single planetary policy that would maintain world peace?

This virtue was accompanied by a vice, namely, nationalism. The gains of internationalism were trumped by nationalism. Even if a select group of high minded scientists could dedicate themselves to world peace, there would always be that minority of Frankensteinian mad scientists who would sell their souls to the interests of their well paying governments. On the one hand, the scientific community seemed to hold the power to save. On the other hand, scientists were feared because they, like other mortals, could be swayed and bribed by national interests to perpetuate the spiraling competition for nuclear superiority.

The Oppenheimer Synecdoche

I would like to tease out this love-fear tension in the relationship between science and culture by looking briefly at the career of Atomic Bomb maker, J. Robert Oppenheimer. This University of California physicist directed the Manhattan Project, which invented the atomic bombs dropped on Hiroshima and Nagasaki that ended World War II in the Pacific Theater. Oppenheimer was a hero.

"The physicists have known sin; and this is a knowledge which they cannot lose," wrote Oppenheimer in 1948 in *Technology Review* and *Time* magazine.[73] Once Pandora's box had been opened and nuclear weapons knowledge began spreading, Oppenheimer sought to slam the lid down again through internationalizing atomic oversight. He proposed in the *New York Times Magazine* "that *in the field of atomic energy* there be set up a world government. That *in this field* there be a renunciation of sovereignty....to protect the world against the use of atomic weapons and provide it with the benefits of atomic energy."[74] He pressed his case in the White House and the United Nations. His efforts failed. Then President Harry Truman led America into the dizzying arms race of the cold war. Science, despite is knowledge and power, could not save us.

In their biography of the bomb-maker, Kai Bird and Martin Sherwin comment, "After Einstein, Oppenheimer was undoubtedly the most renowned scientist in the country—and this at a time when scientists were suddenly regarded as paragons of wisdom. His advice was eagerly sought in and out of government." Oppenehimer's advice was sought, but not taken. Citing Freman Dyson, Bird and Sherwin aver that

---

[72] See: Ted Peters, *UFOs—God's Chariots? Flying Saucers in Politics, Science, and Religion* (Everett WA: Wittenberg Workshop, 1976, 2011).

[73] Kai Bird and Martin J. Sherwin, *American Prometheus: The Triumpth and Tragedy of J. Robert Oppenheimer* (New York: Random House, Vintage Books, 2005) 388.

[74] Ibid., 347.

Oppenheimer tried to become "the savior of humanity at the same time."[75] However, this attempt at terrestrial salvation through science failed. Could an extraterrestrial science accomplish it? Enter: the UFO myth.

The Day the Earth Stood Still

It was 1948 when Oppenheimer pressed the case for international arms control. He failed to persuade the political establishment at home. President Harry Truman put the FBI on him, accusing him of communist leanings. The nation Oppenheimer had saved in war turned on him in peace. The bomb-maker died in disgrace.

Then came 1951 and the appearance on the silver screen of the first of the authentic flying saucer movies, *The Day the Earth Stood Still*. In this classic film, a flying saucer lands on the grassy mall near the White House in Washington. Its pilot is an extraterrestrial, Klaatu. He has come to Earth to negotiate with the heads of state of every nation. This issue is serious and urgent. Unless Earth cease and desist its development of rocket propelled atomic weapons, Klaatu's confederacy will have to eliminate us before we can become a threat to them.

Like Oppenheimer, the fictional Klaatu fails to convince our political leaders. In fact, myopic political leaders will not even give him a hearing. Only scientists take the celestial diplomat seriously. Klaatu explains to an aging physicist, Professor Barnhart, that the aliens fear further development on Earth of what is now only a "rudimentary" form of atomic weaponry. Up until this point the interplanetary confederation had not concerned itself with wars on Earth, because Earth's inhabitants had not yet evolved to the point of being able to affect the extraterrestrials. Killing one another on earth with primitive guns and tanks would elicit no extraterrestrial notice. But now, that atomic weapons could be tied to rockets and shot into outer space, human violence could spill into the extraterrestrial domain. Klaatu's mission is to warn earthlings of the dire consequences. And, only Earth's scientists, not its politicians, could understand this warning and take the appropriate preventative action.

In the concluding scene on site of the flying saucer, the space visitor, Klaatu, makes a speech. "The universe grows smaller every day, and the threat of aggression by any group anywhere can no longer be tolerated. There must be security for all or no one is secure. Now this does not mean giving up any freedom, except the freedom to act irresponsibly. Your ancestors knew this when they made laws to govern themselves and hired policemen to enforce them. We of the other planets have long accepted this principle We have an organization for the mutual protection of all planets and for the complete elimination of aggression. The result is we live in peace, without arms or armies, secure in the knowledge that we are free from aggression and war, free to pursue more profitable enterprises." Note how this extraterrestrial confederacy has evolved beyond where we have. They have progressed to a stage in evolution where war is no more. Peace prevails. The extraterrestrials bring peace as an option for Planet Earth. We terrestrials can choose either peace or obliteration. What the extraterrestrials bring is scientific advance combined with moral advance. This is the foundation of the UFO myth.

Even though the movie, *The Day the Earth Stood Still*, was fiction, it became important in two regards. First, it vividly reflected the cultural ambiguity regarding the

[75] Ibid., 390.

double valence of science, namely, science as destroyer and science as savior. Second, it fed the growing cultural understanding of the potential significance of ETI. The UFO cults and political movements of the later 1950s all incorporated Klaatu's speech, sometimes adding layers of mysticism to the movie's otherwise terse reliance on the scientific mindset.

UFO cults from the 1950s to the present day embrace various levels of the UFO myth, complete with alleged evolutionary advance and scientific rescue from nuclear self-destruction. On November 20, 1952, George Adamski claims a flying saucer descended to greet him in the California desert. A man from Venus emerged from the craft to carry on a telepathic conversation. The countenance of the Venusian visitor had the innocence of a child combined with a grave sense of wisdom and love. Donned with a single weave garment and long hair blowing in the breeze, he had a near Jesus-like appearance. With his hands the Venusian drew the picture of a mushroom shaped cloud and said, "boom! boom!" He warned that nuclear arms testing was not only dangerous for life on Earth, but radio active contamination could spread to other planets. Despite this stern warning, he spoke with compassionate understanding. "His expression was one of understanding, and great compassion; as one would have toward a much loved child who had erred through ignorance and lack of understanding." The space emissary's mission was "to help us and perhaps protect us from ourselves." [76]

Among today's UFO religious organizations, the International Raëlian Movement (IRM), numbering about 60,000 in membership, may be the largest. In an alleged 1973 revelation to Claude Vorilhon, who then became renamed Raël, an extraterrestrial visitor warned earthlings of the dangers of nuclear testing and weaponry. "You urgently need to stop nuclear weapons testing...and if you become a threat to us, we will...have to reduce you to silence."[77] Commenting on Raël's space teachers, Susan Palmer says that they "do not confine themselves to ethical and theological matters. They have a great deal to say about the use of science to solve the world's problems. Science poses the ultimate threat to our well-being and survival, but it also offers the solution to this threat, and the key to immortality and a materialistic salvation."[78]

Diana Tumminia is a scholar who describes the UFO myth as a postmodern phenomenon: "Postmodern myths, such as flying saucers, extraterrestrial deities, and alien abductions, express pluralistic collagelike symbolism of relatively recent origin. With the dawning of the rational technological age, social scientists expected secularization and science to wipe out superstition and magical religions. This has not happened. Instead, a magical enchanted worldview subverted the scientific paradigm into an animistic account of space being that was readily available for our mass consumption. That condition now pervades in our popular culture."[79] Note that in her description,

---

[76] George Adamski and Desmond Leslie, *Flying Saucers Have Landed* (New York: Abelard-Schuman, 1955) 198.

[77] Raël, *The True Face of God* (Quebec: The Raëlian Foundation, 1998) 94-95.

[78] Susan J. Palmer, *Aliens: Raël's UFO Religion* (New Brunswick NJ and London: Rutgers University Press, 2004) 24.

[79] Diana Tumminia, "From Rumor to Postmodern Myth: A Sociological Study of the Transformation of Flying Saucer Rumor," *Encyclopedic Sourcebook of UFO Religions,* edited by James R. Lewis (Amherst NY: Prometheus Books, 2003) 103.

Tumminia suggests that the UFO myth subverts the scientific paradigm by reintroducing magic. This is debatable; yet, I do not want to debate this issue here. Rather, I would like to point out that when we look at the ETI myth as believed by SETI scientists, we see no obvious magic. We see only science in a very speculative form. It is not the return of magic that defines the ETI myth or even its UFO variant; rather, it is the belief that salvation comes to Earth from the heavens, from outer space.

It is vital note how the UFO myth begins with the assumption that science is savior. But, because earthly science has "known sin" by letting loose the nuclear arms race and putting the entire planet at risk, only a terrestrial science augmented by an extraterrestrial science can accomplish salvation. Salvation will come in the form of world peace. Extraterrestrials are able to do for us what we almost but not quite can do for ourselves, namely, establish security through a system of global arms control. Perhaps the more highly evolved UFOnauts can save us from destroying ourselves.

Astrobiology and UFO's, Really?

Might one object to my line of reasoning saying, the UFO myth has nothing to do with science! Why compare let alone conflate these two? Albert Harrison might put up such an objection. He writes, "SETI is not to be confused with religion and myth, so any superficial similarities among extraterrestrial radioastronomers, God, ancient astronauts, and space brothers have to be taken with a huge grain of salt."[80] Now, just what is the difference? Harrison answers, "God, if He exists, is supernatural. Extraterrestrials would be the product of biological evolution."[81] Yes, of course this marks a significant difference, a metaphysical difference. Yet, at what Harrison calls the "superficial" level I believe we need to acknowledge what both SETI and the UFO myth hold in common: they both take the theory of evolution and project it onto the heavens with no empirical evidence that ETI even exists. What both the science of astrobiology and UFO believers share is a wider culture with an evolutionary worldview. This worldview is extra-scientific, because the genuinely scientific model of evolution expunges the doctrine of progress. Both SETI and UFO belief embrace an extra-scientific concept of evolution replete with progress built-in.

In both the astrobiological and UFO versions of the ETI myth, the nationalism and the puffed up ego of terrestrial science make science dangerous to us on Earth; so we need an imaginary extraterrestrial science coming to Earth to save us from self-destruction. What terrestrial science has been unable to do—bring peace on Earth—will soon be accomplished by extraterrestrial angels wearing white lab coats.

What we are doing here is trying to identify the shared mindset that gives rise to astrobiology, SETI, and UFO belief. They all share the extraterrestrial hypothesis; and to some extent they all share the ETI myth. [82]

---

[80] Harrison, *Starstruck*, 99.
[81] Ibid.
[82] Steven J. Dick tracks the extraterrestrial hypothesis, showing how its loss of respectability in the UFO phenomenon did not negatively influence its acceptance among scientists. "Historically the effect of the extraterrestrial hypothesis of UFOs on the extraterrestrial life debate was multifaceted." *Life on Other Wolds,* 168.

Myth and Theology

Will the question of myth in the heart of science be of interest to theologians. I would hope so. What we will pursue in the next few paragraphs I dub *Astrotheology,* theological reflection on new knowledge regarding outer space.[83] Or, more formally, *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 eschatology for the purpose of constructing a comprehensive and meaningful understanding of our human situation within an astonishingly immense cosmos.*

Most theologians are willing to interpret myths, but certainly not willing to believe them in their literal form. Myths tell us about human anxieties and propensities and speculations, to be sure; but they do not tell us literally about the reality of God, or even the reality of the world, for that matter. Myths are symbolic; and they require interpretation to discern their meaning. The problem with the ETI myth in scientific form as we find it in both astrobiology and the UFO phenomenon, is that when articulated it is understood to apply literally to biology and to life on other planets. It is extra-scientific, yet it is treated as if it were scientific. The theologians should be ready to offer an interpretation that scientists and UFO believers might not be equipped to do on their own.

The theologian might also add an item that ETI myth believers would not want to hear: science cannot save us from self-destruction, whether it be terrestrial or extraterrestrial science.[84] In offering such a prophesy, theologians rely upon special revelation and on observations regarding the moral ambiguity of human nature. Myths, whether ancient or modern, need to pass through critical examination—through demythologizing--if they are to be understood in light of our relationship to God.

Theologians are not alone in demythologizing here. Sme scientists also caution us against thinking of science as savior. John Holdren, former President of the American Association for the Advancement of Science told those assembled at the 2007 annual meeting in San Francisco, "I'm a great believer in science and technology, but the notion that science and technology will ride to the rescue is a pernicious one....Believing in technological miracles is usually a mistake."

Theologians should not be shy about pointing out just how science, just like all other human enterprises, is fallen. Science, like everything else the human race touches becomes contaminated by sin, by our exploitative propensity to use anything at our disposal to defeat our competition, survive, and triumph. Despite the marvels of the new knowledge gained and new technology produced, science has become subject to the funding of jingoists and the ambitions of militarists. Advances in scientific knowledge lead frequently to equal advances in the breadth and efficiency of murder, mayhem, and mass destruction. Each decade marks a new level of global terror due to advances in nuclear and biochemical weaponry. This spiral is beyond political control, religious control, moral control, and beyond self-control. If the ETI myth suggests that augmenting

---

[83] See also by Ted Peters, "Astrotheology and the ETI Myth," *Theology and Science,* 7:1 (February 2009) 3-30 and the book, *The Evolution of Terrestrial and Extraterrestrial Life* (Indiana: Pandora Press, 2008) http://bookshop.pandorapress.com/book.php?id=6434.

[84] Cited by Robert Coontz, "Wedging Sustainability Into Public Consciousness," *Science* 315:5815 (23 February 2007) 1068.

terrestrial science with extraterrestrial science will provide this control, the theologian must simply shrug and say: where is the evidence for such a belief?

Elsewhere I have called this the 'eschatological problem'.[85] The Gene myth right along with the ETI myth propose that if we in our generation simply make the right choice that, with the advance of science, we in the human race can advance from warring destruction to a state of world peace. Yet, the skeptical theologian should ask: how do we get from here to there? Can a leopard change its spots so easily? If science got us into the present mess, how can we expect science to liberate us from this mess? If we have evolved to this point, why should we think that more evolving will save us?

According to the Christian theologian, salvific healing comes from divine grace granted us within the setting of our fallen life on Earth. The cross and resurrection of Jesus Christ symbolize the presence of this saving grace. In the cross we see God's identification with the victims of human violence. In the resurrection we see God's promise that we will not forever be locked into the spiral of violence. When trusting this promise, Christians believe that the Easter resurrection of Jesus is the herald announcing a new and qualitatively different future. It will be God's final future. It will be the equivalent of a new creation in which crying, and pain, and suffering, and the threat of such will be no more. What God has promised in the Easter Christ is healing, eschatological cosmic healing. Unambiguous healing—even world peace—will come to us only as an eschatological transformation, as an act of God. In the meantime, we will need to be satisfied with ambiguity.

[85] See: Ted Peters, *Futures—Human and Divine* (Louisville KY: Westminster John Knox Press, 1977).