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Astrosociology and the Capacity of Major World Religions to Contextualize the Possibility of Life Beyond Earth

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Abstract

As the scientific view of life as an emergent property in the universe continues to gain traction, it has become increasingly necessary to assess the potential for religious engagement with astrobiological issues. Astrobiology is an endeavor conducted on behalf of all humanity, and the fruits of its continued progress promise to have a far-reaching impact on every belief system and worldview. While the body of literature gauging the religious implications of the possibility of life beyond Earth continues to expand, there has, to date, been a disproportionate emphasis placed on the examination of Christian theology. Given that more than two-thirds of the world's population is non-Christian, astrosociological outreach to the religious community should strive to encompass all of the major religions of the world. This paper seeks to provide an overview assessment of the world religious landscape as it relates to astrosociology through an examination of the nineteen largest religious groups in the world. The analysis contained in the paper relies on surveys of religious leaders and adherents, religious literature that directly and indirectly addresses astrobiological issues, conference and workshop proceedings, and the astrobiological literature addressing society and religion. This paper illustrates the capacity of religion to act as a mutually beneficial partner with science in helping to contextualize astrobiological issues in diverse societies across the world. Most studies on the religious implications of astrobiology have tended to focus on whether Christianity is flexible enough to reconcile life beyond Earth with human-centered doctrines such as a special creation, a unique incarnation, and vicarious redemption. This paper shows that while there is reason to believe that most of Christendom would be amenable to astrobiological evidence, the larger religious landscape of the world seems to be philosophically constituted to not merely survive astrobiological pursuits, but to be explicitly compatible with, or even validated by, evidence of the universe harboring life beyond Earth.

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1. Introduction

As the scientific view of life as an emergent property in the universe continues to gain traction, it has become increasingly necessary to assess the potential for religious engagement with astrobiological issues. The last several decades of astrobiological research, from the unearthing of extremophiles within our own biosphere, to the discovery of hundreds of exoplanets beyond our solar system, have resulted in an unprecedented momentum for the astrobiological endeavor. Consequently, the fruits of its continued progress are in need of reaffirmation of its far-reaching impact on every belief system and worldview. While the literature on the intersection of astrobiology and religion holds out great promise for religious adaptation and absorption, there are yet some characteristics of religion that might yield potential resistance to astrobiological evidence and the search for life beyond Earth. Whether a result of ethnocentrism, or of the global influence of Western philosophy, most research engaging astrobiology's relationship with religion has tended to disproportionately focus on Christian theology. Given that more than two-thirds of religious people in the world are non-Christian, astrosociological outreach to the religious community should strive to encompass all of the major religions of the world.

The population data on world religious adherence in this paper is drawn from adherents.com, which provides a scholastically recognized compendium of religious data. The methodological approach of using this website for religious statistics is justified by the inherent vicissitudes of religious categorizing. Adherents.com takes a distinctively sociological perspective in assessing religious affiliation by supplementing its compilation of data drawn primarily from the *Encyclopedia Britannica* and the *World Christian Encyclopedia* with hundreds of other sociological sources (Adherents.com). With respect to the population statistics provided for the major religions of the world, the data gathered through adherents.com has been cross-checked with other statistical compendiums and stands as one of the most authoritative source on religious affiliation as would be of interest from an sociological/ideological perspective.

On methodology, it should be noted, however, that three of the twenty-two largest religions listed by adherents.com have been excluded from this study, namely, Juche (the state religio-ideology of North Korea), Neo-Paganism, and Scientology. While there is much controversy in the literature as to whether these categories of adherent should be considered religions, they have been excluded from this study mainly due to the paucity of their treatment and recognition in the most authoritative treatises on world religions. In short, *Juche* blurs the distinction between state ideology and religion proper, *Neo-Paganism*, for all ideological purposes, is subsumed into the Primal-Indigenous religions, and *Scientology* has not been treated definitively in the literature as distinct from a cult that can sustain co-exist simultaneously with other religious convictions.

The intent of this paper is to broaden the discussion of religious reaction to astrobiology and to compare religious features and doctrinal characteristics that are likely to prove resistant to the possibility of life beyond Earth. Through an examination of the nineteen largest religions in the world, this paper contends that the more detached religious doctrines are from the centrality of the importance of humans in the universe, the more accepting they will be of astrobiological endeavors and evidence. Inversely stated, this paper predicts that the more anthropocentric the religious doctrine, the more potential resistance to astrobiology is likely to result.

The level of religious anthropocentrism can be examined through religious teleology, which is in essence, a religion's particular orientation to the ultimate reality or purpose of the universe. Religions that are strongly anthropocentric place the role of humans at the center of the purpose of the universe. Accordingly, their religious doctrines often feature a personal monotheistic creator god who has designed a central role for humans in the happenings of the cosmos. Given their human-centered purpose, anthropomorphic religions are comprised of an authoritative and unalterable cosmic narrative delineating

different acts in a human-centered universe, culminating in a dramatic ending pivoting human beings in the ultimate end purpose of the universe. The role of humans in the universe is seen through an eschatology or messianic ideology, which places the role of humans as central to the teleological purpose of everything in creation. Consequently, strongly anthropocentric religions are more likely to be resistant to share the cosmic stage with other actors in the playwright's universal tale.

Most of the literature on the intersection of astrobiology and religion, to date, focuses on the three monotheistic Abrahamic religions. Surprisingly little attention has been paid to the larger religious landscape, most notably the major philosophical underpinnings of Eastern religions that feature the detachment of humanity from religious teleology. This paper expands on the research of Eastern religions, insofar as astrobiology implications are concerned, and extends the analysis to all of the nineteen largest religions of the world.

The analytical framework presented in this paper suggests that there is nothing uniquely “Eastern” or “Western” about religious traditions that make them particularly well suited, or ill-suited, to the acceptance of astrobiology, but rather, pertinent differences between religions are more aptly captured by the centrality of humanity in religious teleology. The less humans matter to one's worldview, the more palatable a plurality of inhabited worlds becomes. Thus, this paper seeks to arrange each of the nineteen largest religions in the world into the following four categories based on the centrality of human beings in their respective religious teleology:

- 1) *Strong Anthropocentric teleology,*
- 2) *Weak Anthropocentric teleology,*
- 3) *Weak Teleological Detachment from Humans,* and
- 4) *Strong Teleological Detachment from Humans.*

This paper predicts that as religions move along the scale towards strong teleological detachment from humanity, they will be more receptive to astrobiological evidence suggestive that humans share the universe with life elsewhere. As religions move along the spectrum in the opposite direction toward strong anthropocentrism, the more potential there will be for doctrinal disharmony with astrobiological evidence, which could potentially threaten to displace humans from primacy in the purpose of the universe.

2. The World Religious Landscape

While mapping the world's major religions on an anthropocentric teleological spectrum, it might prove useful to provide a brief biological sketch of each major religion. Despite the very palpable global significance of Christianity, especially in terms of real numbers, a Western perspective still has the potential for ethnocentric bias when assessing which religions “matter” in the World. For instance, Judaism is only the twelfth largest religion in the world with fourteen million adherents, compared with Chinese traditional religions boasting 394 followers, yet most Westerners are far more concerned with Jewish interpretations of reality than traditional Chinese interpretations. While some religions will be more familiar than others, the interest in brevity calls for a concise introduction to each of the nineteen largest religions followed by an assessment of the centrality of humanity in the ultimate significance in the creation and end purpose of the universe. For sake of ordering, and of potential world impact, the largest religions in the world are presented in descending order of population size.

2.1. Christianity (2.1 Billion Adherents)

With 2.1 billion adherents, Christianity is both the largest religion in the world, as well as the most familiar to Western audiences. Founded by followers of Jesus Christ, Christians view Christ as the monotheistic god of the Abrahamic tradition incarnated on Earth, in human form, for the purpose of fulfilling the prophecies of the Old Testament. Given the large size, long history, and geographic range of the religion, Christianity has splintered into dozens of denominations and sub-denominational groups.

The extent of this religious diffusion makes categorizing Christianity particularly hazardous, but there are some major doctrinal similarities that the various denominations adhere to with varying levels of commitment. Of particular importance to the question of the centrality of humanity in religious teleology are the Christian doctrines of special creation, original sin (resulting in the fall of man), incarnation, vicarious redemption, and salvation.

A common characteristic of strongly anthropocentric religions is a view of god as a paternalistic father-deity who created the cosmos with humans as the focal point of the universe. Christianity shares the god of the Old Testament, Yahweh or Jehovah, with Judaism and Islam in the *Genesis* account of the formation of the universe. Central to the creation narrative found in the Old Testament is the role of human beings, for whom the whole of the universe was intentionally created. Where Christianity parts ways with its Judaic origin is with the doctrine of incarnation. Incarnation, in short, is the belief that Jesus Christ was the body incarnate of God himself, as one part of a triune essence. Christians believe that incarnation occurred only once, on Earth, for human beings. The personal god, in the bodily form of Jesus Christ, then suffered and was executed as an act of vicarious redemption on behalf of humans for their original sin in the Garden of Eden. It is through faith in this act of redemption, by Jesus on the behalf of human beings that Christians hope to gain eternal life through the doctrine of personal salvation.

While different sects within Christianity may differ slightly in details and in emphasis, these human centered doctrines are at the core of the religion. Where denominations differ more substantially is in their view of eschatology, or the ultimate destiny of humanity. Some of the more fundamentalist sects of the religion hold a firm belief in messianic ideology, seeing the second return of god to Earth, again in the form of Jesus, to judge the living and the dead as imminent. The doctrine of Final Judgment, or The End of Days, derived from *The Book Revelation*, is source of strong division among the different denominations of Christianity. Nonetheless, a common thread that ties and unites all of the varying sects of Christianity is the belief that a personal god created humans for a purpose, and subsequently intervened on their behalf in bodily form.

Perhaps more importantly, virtually all Christians believe that their corporeal human existence on Earth will culminate in eternal life with the personal god who created them. Theirs is a universe that was created with them in mind, and both the history and future of the cosmos concerns itself primarily with their existence and behavior. Given the centrality of human beings throughout their religious schema, Christian denominations are perhaps most saliently delineated or stratified from conservative to liberal according to the distance from which they believe the personal creator god remains involved with human affairs. For this reason, Christianity, depending on sect affiliation, is characterized by either a strongly or weakly anthropocentric religious teleology. Overall, Christianity is the largest and perhaps the most anthropocentric of the world's major religions. Whether inspired by size, global influence, or mere familiarity, it is both fortuitous and unfortunate that Christianity has been the subject of the greatest amount of attention by the astrobiological community. In its more conservative iterations, Christianity sees everything in the universe as pivoting on human affairs, which makes its interaction with astrobiology a particularly important subject of study.

2.2. *Islam (1.5 Billion Adherents)*

Like Christianity, the religion of Islam finds at its foundational roots the Abrahamic monotheistic tradition of the Old Testament of Judaism. Founded in 610 A.D. by the prophet Muhammad, Islam accepts most of the teachings of Judaism, and even views Jesus Christ as a prophet, but differs from its sibling religions in viewing the teachings of the prophet Muhammad as the final and unalterable word of the one true god Allah. More so than the other two Abrahamic religions upon which it is based, Islam is a religion that concerns itself with political affairs and sees little to no separation between church and state.

While there is much that could be said of the different sects of Islam, ranging from militantly conservative to ecumenical and fairly liberal, the subject of this paper calls for only an examination of Islam's orientation towards the role of human beings in the universe. Followers of Islam, or Muslims as

they are known, are commanded by their religion to obey very strict rules of religious observance. Given its monotheistic personal creator god who shows particular concern for human behavior, Islam would have to be classified as at least weakly, if not strongly, anthropocentric depending, once again, on how closely a given sect of the religion feels their personal god is monitoring the affairs of human beings on Earth.

2.3. Hinduism (900 Million Adherents)

Hinduism is one of the oldest and most spiritual religions in the world. “In Hinduism, ultimate reality and the goal of religion are to be sought inwardly, not outwardly.” ([1], p. 51). Hinduism’s emphasis on inward spiritualism is a point of departure from the three great monotheistic Abrahamic religions that posit a personal father-like creator deity with whom adherents find explanation externally. Hinduism is a polytheistic religion with doctrines broad enough to allow its adherents, the majority of which reside in the Indian subcontinent (“Hindu” was the Persian word for Indian) ([2], p. 261), to worship a variety of deities a la carte. While the expansive pantheon of Hindu deities makes the religion enigmatic and somewhat mysterious to Westerners, the history of Hinduism has proven itself to be one of the most adaptable and absorbent religions in the world ([3], p. 86). Hinduism “has no founder, no single creed or authoritative set of beliefs; even its sacred scriptures are widely diverse” ([3], p. 86).

The lack of a rigid external authority issuing behavioral commandments, and declaring by fiat an unalterable account of temporal events in the universe, make Hinduism particularly well suited to accommodate astrobiological evidence and the possibility of life beyond Earth. In fact, Hinduism might more aptly be described as an evolving set of traditions than a closed system of holy writ and fixed beliefs as religion traditionally conceived of by the West ([1], p. 51). The variety and diversity of schools of thought within Hinduism render a universal declaration of its doctrines a fruitless, if not misleading endeavor. There, however, are certain presuppositions that pervade virtually all interpretations of Hinduism. Pertinent to this inquiry into the centrality of humanity in the ultimate construction of the universe are the following beliefs: “At the cosmic level *dharmā* is *santana dharmā*, the eternal *dharmā*, which is the unchanging universal law of order which decrees that every entity in the universe should behave in accordance with the laws that apply to its own particular nature” ([2], p. 279).

Perhaps the most well-known presupposition of Hinduism in the West, is karma, or the idea that “every action produces its inevitable result so that one’s status in this life is determined by one’s conduct in a former birth [or *samsara*, “the endless cycle of birth and rebirth ...”] ([2], p. 282). This cycle of rebirth represents a significant detachment from a universal plan for individual humans in a religious teleology. Hinduism’s detachment from humanity is perhaps best summarized by the concept of Brahman, “the impersonal absolute or world soul that underlies the phenomenal diversity of the universe and is, at once, both immanent and transcendent” ([2], p. 282). “Just as humanity is subject to cycles of birth and rebirth, so the universe itself is thought to go through cycles of dissolution and recreation within immense time spans” ([2], p. 285). Hinduism is a prime example of a religion that is strongly detached from a human-centered teleology.

2.4. Secular/Non-Religious (1.1 Billion Adherents)

The fourth largest category of religious affiliation in the world is the group of people who claim no religious affiliation at all. Numbering around 1.1 Billion people, the category of people with no religious identity is a diverse and interesting group. Certainly, many people with no religious affiliation can still affirm a belief in a god (albeit detached from a traditional organized religion), be spiritual in nature, and practice faith in any personalized way of their liking. The important thing to note, with secular/non-religious people, is that what they share in common is lack of adherence to an organized religious practice.

The secular/non-religious category can provide an interesting control group because they are by definition disinclined to possess a rigid dogmatic view of human involvement in cosmic teleology. While it would be impossible to ascribe any universal view to this category, studies show their lack of adherence to an unalterable doctrine makes them particularly well disposed to accommodating new scientific evidence of all kinds, including astrobiological evidence.

2.5. Chinese Traditional Religion (394 Million Adherents)

Most contemporary scholars of religion have come to characterize the traditional religious worldview of the majority Chinese population as a composite cultural milieu of Taoism, Confucianism, and Chinese “folk” beliefs. While Buddhism has become a major religious force in China, Buddhism originated in India and is therefore excluded in the population of adherents to traditional religious belief indigenous to China. Historically, “[t]here are, or have been, religious elements present in many facets of family and social organization, in the cults and practices of economic and other groups, in political theory and action at almost all levels from local to national government.” ([4], p. 91). “[B]oth Confucianism and Taoism in their origins were simply philosophical systems followed by ‘schools’ and individuals and were neither institutionalized nor particularly ‘religious’ [in the Western sense].” ([4], p. 91). At various times throughout history both Confucianism and Taoism have been regarded as the “state-cult” or “philosophy of a dominant governing class” ([4], p. 91). While differences exist in form and practice, Taoism, Confucianism, and Buddhism have blended together with traditional folk beliefs in China. “The Chinese term for Taoism is tao chi (the school of the way). ... the tao ... of Confucius is ethical in sense and deals with a way of life and with daily philosophical and moral problems” ([5], p. 365-66).

“Whereas Hindus are spiritualistic, Europeans dualistic and ‘God-centered,’ the Chinese are naturalistic or Nature-centered in their religion” ([1], p. 151). “... the goal of life is to live happily in the actual present. Religiously, each man has already arrived at the goal of life, if he can but recognize the fact and enjoy it” ([1], p. 152). “There is nothing unnatural about life. The goal of life, and thus of religion, is to be realized by recognizing and assenting to ‘the importance of living’” ([1], p. 152).

In the modern Chinese context, religion “is festive, celebrating the passage of men and women in the Chinese community through the cycle of life and death. ... Chinese religion is therefore a cultural rather than a theological entity” ([2], p. 445). The major traditional religions of China work in conjunction with one another. Whereas Confucianism is a “system of ethics for public life”, Taoism is a “system of rituals and attitudes towards nature” ([2], p. 445). While “religious Taoism” has come to represent a small distinct religion in-and-of-itself, the philosophical Taoism that informs traditional Chinese beliefs remains detached from an anthropocentric religious teleology ([6], p. 360).

The conviction that humans are *part* of nature itself vastly diverges from the supernatural teleology of Western religions, which presuppose a creator of the universe who appoints human beings as the central figures upon whom the whole of the natural order turns. Therefore, traditional Chinese religions can be conceptualized as strongly detached from the centrality of humanity in religious teleology. As we are part of nature, the traditional Chinese worldview would hold no ultimate purpose outside of nature for which we are currently living our lives.

2.6. Buddhism (376 Million Adherents)

Complementing the two indigenous Chinese traditional religions of Confucianism and Taoism, Buddhism migrated to China from India around the first century of the Common Era destined to become a major religious force in the world’s largest country. Unlike the traditional religions of China however, Buddhism brought with it a hope for an afterlife in the form of reincarnation ([1], p. 199). While Buddhism is currently most prevalent in China, it’s influence has truly been global, and over half of the people on Earth currently live where Buddhism was at some point in history the dominate religion ([2], p. 369).

Buddhism, in its various forms, features a complex system of beliefs and practices that do not readily conform themselves into one universal system of belief. “For some, Buddhism is a religion. For others it is a philosophy or culture” ([7], p. 30). The major common thread throughout the different sects of Buddhism is the centrality of the life and teachings of Gautama Buddha. Unlike Christ or Muhammad, Buddha, living in India circa 500 BCE, thought of himself as no more than a mere mortal seeking *Enlightenment* through “the sense of selflessness achieved by way of inner searching” ([7], p. 30).

“Buddhism is not primarily concerned with the worship of any single figure – man or woman, demon or god. At the heart of the religion is a set of universal laws or dharma. Buddhist teaching centers around the *Four Noble Truths*. The First Noble Truth maintains that all existence is suffering; the Second that the cause of suffering is desire; the Third that the extinction of desire puts an end to suffering and leads to enlightenment; the Fourth that the path to enlightenment, the Eightfold Path, is open to all men. The Eightfold Path consists of: (i) right knowledge (ii) right thought (iii) right speech (iv) right actions (v) right livelihood (vi) right effort (vii) right mindfulness (viii) right concentration” ([3], p. 36).

“Buddhism has no place for the supernatural”, ([5], p. 85) and while the concept of reincarnation appears through most Western eyes as easily dismissed mysticism, more than most Western beliefs of the afterlife, reincarnation speaks to a more natural reconciliation with living within the confines of *this* world. Once one attains enlightenment, the cycle of birth and rebirth ends, and with it, so ends the state of mortal existence ([5], p. 85-86). The whole motivation of Buddha himself was to explain the “entanglement of beings in the cycle of existence and the possibility of removing it” ([6], p. 50).

Despite the geographical diversity and wide-ranging forms of Buddhism, most Westerners tend to associate Buddhism more in the realm of philosophy than religion. Like most Eastern religions, Buddhism is primarily interested with how to live physical human existence on this natural Earth, rather than concerning itself with the question of the ultimate supernatural purpose of why human beings are here on Earth to begin with. In this sense, Buddhism is devoid of any grand eschatology or messianic ideology that reads into the universe a unique purpose and design for human beings. For this reason, Buddhism is another classical example of a religion that detaches human beings from the central purpose of the universe and denies to human actors a central role in the ultimate religious teleology of the universe.

2.7. Primal-Indigenous Religion (300 Million Adherents)

This group could alternatively be described as tribal, ethnic, or animist religions, which historically developed as local or clan belief systems. “This grouping includes thousands of distinct religious traditions, mostly the religious-cultural worldviews of peoples who have been grouped together in one category because they are pre-literate or less advanced technologically than Western/European cultures [upon whose religious views they were categorized]. There are similarities among many primal-indigenous religions/cultures, such as use of an oral rather than written canon, and a lack of rigid boundaries between the sacred and secular (profane) aspects of life. But few, if any, generalizations hold for all groups” (adherents.com). For purposes of categorization, traditional African religions have been separated out from this group despite having much in common with these animistic primal-indigenous religions.

What is common to these “primal” religions is their indulgence in animism, or “the belief that spirits inhabit all natural objects, such as trees, animals, and rivers, and all natural forces, such as lightning. Accordingly, people can sacrifice to these objects and forces, or worship them” ([3], p. 17). While these primal-indigenous religions differ in which objects or totems are viewed as sacred, they all tend to associate the natural world as intricately involved in the affairs of their existence. They commonly view the actions and behaviors of human beings as a force that can influence nature to help or hurt the localized group or clan. In this sense, primal-indigenous religions could be described as strongly anthropocentric. Evidence of life beyond Earth could prove to be quite disruptive to these religions indeed. Such news has the potential to shock a worldview that relates the natural world as being finely in tune with the

happenings of the local tribe or ethnic group. It is conceivable that life beyond Earth would take on an immediately powerful religious symbol that would be strongly associated to a larger meaning for the clan itself.

2.8. *African Traditional and Diasporic Religion (100 Million Adherents)*

While major overlaps exist between primal-indigenous religions and African Traditional religions, categorical separation is founded on the basis that the former is characterized by pre-technological societies, while the latter persists in tact despite comingling with more sophisticated societies (adherents.com). Even after African communities consolidated in the “New World,” an insular religious cultural identity, rooted in traditional African religions, persisted in the face of, or perhaps galvanized in resistance to, the religious influence of the external dominant culture. For all pertinent purposes, the orientation of traditional African religions to the natural environment is the same as those previously discussed in the previous section on primal-indigenous religions ([2], p. 562-578; 690-726). Therefore, this category would also be associated with a strongly anthropocentric worldview.

2.9. *Sikhism (23 Million Adherents)*

Sikhism is a monotheistic religion founded in India in the late fifteenth and early sixteenth centuries by Nanak, a prophetic figure who became a wandering teacher after having a religious experience at the age of thirty. ([3], p. 174). Nanak taught that both Hinduism and Islam contained some degree of ultimate truth. From Islam, Nanak preserved the idea of a monotheistic god but accompanied it with the revisionary caveat that god was to be discovered through inward meditation, in opposition to the outwardly dogmatic ritual and custom of Islam. From Hinduism, Nanak retained the central tenet of reincarnation ([3], p. 176). Seeking unification of Islam and Hinduism, Nanak believed that, “with God’s help and self-discipline rather than traditional rituals ... the endless cycle of existence, could be overcome and release achieved” ([7], p. 159). Sikhs, a term literally meaning “disciples”, believe that Nanak was but the venerated first in a series of gurus or “teacher-leaders,” who in turn added to the original teachings of the religion.

Sikhism has a strong association with a monotheistic god and teaches, “the oneness of God is the fellowship of man” ([5], p. 341) This strong anthropocentrism (influenced by Islam) is tempered by the belief that “the aim and end of life is not to attain a heavenly abode but to develop the Essence that is in man and thus merge himself in God. God is described as both personal (sagun) and absolute (nirgun)” ([5], p. 341). The Islamic elements of absolute monotheism bends Sikhism towards strong anthropomorphism, but at the same time, the Hindu elements of reincarnation, inward searching, and oneness with the world, bend the religion back toward human detachment from the ultimate purpose of the universe. Overall, the predominance of monotheism, moderated by traditional Hindu beliefs, make Sikhism most aptly described as weakly anthropocentric in its orientation towards the centrality of human beings in its teleological understanding of the universe.

2.10. *Spiritism (15 Million Adherents)*

Spiritualism, or simply the belief that there is something more than matter (i.e. the denial of materialism), is a necessary but not sufficient belief in “spiritism,” or the belief than one can commune with an incorporeal intelligence, or spirit [8]. Spiritism, as a religion, began in the mid-nineteenth century as an alternative religious supplement to the Judeo-Christian tradition. While it retains the monotheistic heritage of its religious foundation, its central focus is on the survival and reincarnation of the soul after death [8].

Mediums, or “special people, capable of contacting, often while in a state of trance, the realm of the dead” ([2], p. 603), occupy the priestly class of Spiritism. Perhaps inspired by the need for answers in an

age of science, mediums, or “channels, as they are also known” are believed to be able to contact spirits who can “speak authoritatively about the great human questions of origins, meaning and destiny” ([2], p. 603). Mediums almost uniformly stress that their powers come from God and not themselves ([3], p. 178).

Spiritism explicitly affirms belief in a plurality of worlds and the existence of life throughout the universe [8]. While its foundation in Judeo-Christian creationism are suggestive of strong anthropocentrism, Spiritism does not view the death of Christ as an atonement for human sins, and finds good works to be more important to spiritual reincarnation than faith in Christ or the Abrahamic God [8]. Due to its insistence that the soul lives on in another form somewhere else in nature, coupled with its lack of a universal role for humanity in the larger purpose of the universe, Spiritism, while rather enigmatic and hard to categorize, is perhaps best conceived of as weakly detached from the prime importance of humanity in the ultimate scheme of the universe. Reflective of a new age of science, Spiritism presents an interesting offshoot from Christianity that possess not just the potential to absorb, but also to welcome, astrobiological evidence of life beyond Earth. How closely this acceptance would align itself with the strictures of objective scientific scrutiny is subject for another inquiry altogether.

2.11. *Judaism (14 Million Adherents)*

The first of the three great monotheistic Abrahamic religions, Judaism is the source of the Old Testament, which serves as the foundation for both Christianity and Islam. Judaism should be familiar to most Western audiences, although many will be surprised to learn that Judaism only boasts of a modest fourteen million adherents. While relatively small in numbers compared to Christianity or Islam; the global reach and significance of Judaism serves as a constant reminder why attention to some of the smaller world religions can be both productive and essential to mapping the world religious landscape.

“At the centre of Jewish belief lies the faith in one God, who has made the heaven and the earth and all they contain (*Genesis* 1:2), and who took the Israelites out of their bondage in Egypt, revealed his divine teaching or Torah to them, and brought them into the Holy Land. This idea of God’s redemptive acts in history has colored the Jews’ view of their situation since the biblical period, and proffers the hope that one day the Messiah, or anointed one of God, will come to usher in a messianic age when the Jews will be gathered once again to the Land of Israel” ([2], p. 21-22). “The Jews believe that they are a chosen people, specially elected by the one true God, *Yahweh* ... The Jews trace their origin as chosen people to the moment when God made a covenant with Abram, who was known as Abraham thereafter” ([3], p. 104).

It is this very quintessential kind of personal god who intervenes and concerns himself in the affairs of man that makes a religion anthropocentric. The messianic plan for the Jews typifies an anthropocentric belief that a creator-father God will suspend the orderly running of the universe in the name of a predestined plan for human beings. To the extent, however, that this paper is concerned with the centrality of humanity in the ultimate end or purpose of the universe, Judaism stops short of Christianity in its concern for the future state of the cosmic plan for humanity. The *Book of Revelation*, addressing how the world will end, is a distinctly Christian addition to its Jewish foundation. Judaism, for the most part, is much more concerned about God’s plan for life *on* Earth, in the here and now. For this reason, Judaism could be considered to possess a weak or strong anthropocentric religious teleology (dependent upon a conservative or liberal interpretation), distinguished from a distinctly strongly anthropocentric teleology by its lack of concern for the role of humanity in the larger end plan of the universe. The reason this distinction is significant for religious reaction to astrobiology is that a religion concerned primarily with life here on Earth leaves more room for absorption of other plans for other planets, than does a religion who views the entire universe, past, present, and future, as part of a plan for humanity.

2.12. Baha'i (7 Million Adherents)

Founded in the later half of the nineteenth century, the followers of Baha'i believe that Baha Allah, a prophetic figure, is one in a series of prophetic figures that also includes Moses, Jesus Christ, and Mohammed. "According to Baha'i teachings, 'Religious truth is not absolute but relative.' The inaccessible essence of God manifests itself through the eternal Logos, while the Logos is one, its manifestations are many. Their task is to create ever-wider unities in the world" (*The Encyclopedia of Religion (Vol. 2)*, p. 41). Baha'i stresses "the unity of all men and all creeds ... Allegiance to one's country is not as important as loyalty to the world" ([3], p. 25).

The Baha'i religion interprets belief in heaven and hell as symbols that represent whether or not one is journeying toward God (*The Encyclopedia of Religion (Vol. 2)*, p. 41). In accordance with its universal nature, the inaccessibility of god, and the stress on relative truth, place Baha'i as a religion that best fits the category of weak detachment from humanity. If God is capable of multiple manifestations, all of which are equally *true*, then there is nothing to prevent such manifestations from being true on other planets harboring other life as well. Baha'i lacks the insistence on the primacy of one unalterable and final truth of God's plan for human beings in the universe that a more anthropocentric teleology would possess, and is therefore weakly detached from an anthropocentric teleology despite its attachment to prophetic traditions.

2.13. Jainism (4.2 Million Adherents)

Jainism is a religious movement that follows a belief established by a prophet known as Jina, or "Victor" (*The Encyclopedia of Religion (Vol. 7)*, p. 507). This religion arose in India around the same time as Buddhism and shares many of the same characteristics. The Jains believe in the possibility of reincarnation into any animal form and therefore place an extreme emphasis on non-violence to all animals, any one of which having the potential to be, or to have been, human ([3], p. 98-99).

There is no supreme being in Jainism, and the central importance of reincarnation into any living form based on the way one conducts their life, results in a strong religious teleological detachment from humanity.

2.14. Shinto (4 Million Adherents)

The term Shinto describes a range of traditional Japanese beliefs and was historically the state religion of Japan ([3], p. 173). Shintoism "still retains animistic and polytheistic elements as prominent features" ([1], p. 222). "The foundations of Shinto belief maintain that a primal and supernatural force, the *Kami*, resides in all that lives, and all that is natural" ([3], p. 98-99). "There are Shinto prayers and Shinto rituals, but the doctrine is minimal. Some might call Shinto a way of life rather than a religion *per se*" ([7], p. 153).

Characterized by a belief that anything in the natural realm can be viewed as divine, there is strong teleological detachment from humanity. There are no central doctrines in Shintoism derived from a narrative decreed by a personal god that dictates a planned involvement with humanity in the course of the universe. Consequently, the Shinto religion is strongly detached from an anthropocentric teleology.

2.15. Cao Dai (4 Million Adherents)

Cao Dai is a modern Vietnamese Universalist religion. A relatively new religion, founded in 1926, Cao Dai seeks to unify virtually all of the major contemporary religions by combining the doctrines of reincarnation from Buddhism, Taoist spiritism, and including Jesus and Muhammad as among the venerated figures of the religion (*The Encyclopedia of Religion (Vol. 3)*, p. 72). Given its pluralistic outlook, and broad absorption of other religious beliefs, Cao Dai envisions a new age of world harmony.

As such, Cao Dai can be described as lacking the convictions of an anthropocentric religious teleology. It is unlikely that this religion would have any difficulty absorbing a new religious worldview ushered in by astrobiological evidence of life beyond Earth.

2.16. Zoroastrianism (2.6 Million Adherents)

Zoroastrianism is an ancient Persian religion that is dualistic in nature in the sense that it envisions “two divine forces, one good, one evil, which are continually at war with each other ... Zoroaster taught that man can help tip the balance so as to enable [the good force] to win finally” ([3], p. 212). Ultimately, there will be a Last Judgment where good wins out with the help of good men and the souls of the dead will be reunited with their bodies. “If they are not ready for heaven, they will fall off into *purgatory*, where they will be purified, so as to enter heaven at a later stage. Finally, all the dead will share in the eternal *Kingdom of God*” ([3], p. 212).

The anthropocentric teleological narrative of Zoroastrianism should sound familiar to Western audiences raised within dominant Christian cultures. Christianity was heavily influenced by the Zoroaster belief that the Earth was a staging area in a grand cosmic plan where the forces of good and evil contended for the souls of humanity. In this sense, Christianity and Zoroastrianism are prime examples of religions that view humanity as central to an eschatological narrative about future events in the universe.

2.17. Tenrikyo (2 Million Adherents)

“A monotheistic Japanese religion established in 1838, Tenrikyo preaches a doctrine of world renewal and individual salvation” (*The Encyclopedia of Religion* (Vol. 14), p. 403). Tenrikyo posits a one true, original creator god featuring a “pantheistic and immanent nature” as well as a “transcendental and personal existence” (*The Encyclopedia of Religion* (Vol. 14), p. 404). Tenrikyo views human life as something borrowed from god and that the process of reincarnation is as a restart leading to progressive purification (*The Encyclopedia of Religion* (Vol. 14), p. 404). In Tenrikyo, god is viewed as a parent creator who “created the world in order to enjoy seeing the harmonious life of human beings” (*The Encyclopedia of Religion* (Vol. 14), p. 404).

While Tenrikyo subscribes to belief in a monotheist creator god, it lacks a central narrative or plan for the role of human beings in the universe. Given its belief in reincarnation and individual salvation, Tenrikyo is a religion characterized by weak religious detachment from anthropocentric teleology.

2.18. Unitarian-Universalism (800 Thousand Adherents)

Unitarianism was developed as an offshoot of Christianity in the eighteenth century and while it affirms belief in one god, “[Unitarians] believe that all religions are different paths to the same truth ... they believe in a liberal approach to religious faith and morality, and in using reason to criticize traditional approaches where necessary” ([3], p. 193).

Opposing all fixed doctrines, Unitarians keep an open view of all faiths and religions, and as such can be described as lacking any anthropocentric religious teleology.

2.19. Rastafarianism (600 Thousand Adherents)

The Rastafarian movement can best be described as a *religio-political cult* established on the doctrine of “racial redemption” following the relocation of black people to the West Indies (*The Encyclopedia of Religion* (Vol. 3), p. 95-96). Rastafarianism is practiced in “small, informal bodies and are not affiliated with organized groups.” (*The Encyclopedia of Religion* (Vol. 3), p. 95-96).

While Rastafarianism is primarily concerned with liberation theology and political justice in the here and now, to the extent it can be considered a religion proper, the movement associates divinity with

nature, defined as nonindustrial society (*The Encyclopedia of Religion* (Vol. 3), p. 96). Due to its emphasis on political affairs on Earth, Rastafarianism can be said to lack a religious teleological view of a cosmic plan for the universe centered on the human species.

2.20. Discussion

When dealing with a treatment of subject matter as diverse and as complex as religion, it should go without saying that any comprehensive and exhaustive analysis of every religious belief system in the world would require voluminous treatises that would expire in relevance before ever entering publication. The intent of this paper is not to summarize even the major religions, but rather to merely survey central religious tenets pertaining to the centrality of human beings in the ultimate purpose of the universe. Throughout history, people have turned to religion as a source of explanation and consolation when confronted with scientific revelations that implicate the place of human beings in the universe. From Galileo to Darwin, anthropocentric religious orientation towards humanity's role in the universe has had a profound impact on the relationship between science and religion.

Given the steady advance of astrobiology in the last several decades, from the discovery of extremophiles here on Earth, the likelihood of water in Mar's past, to the discovery of hundreds of exoplanets, the stage is set for a shifting worldview toward life as an emergent property in the universe. Like all great paradigm shifts, the absorption of this new understanding, should the evidence continue to accumulate, will take time, patience, and religious accommodation. As humanity's quest for meaning, purpose, and place in the universe promises to begin anew, religion has the potential to mediate and broker this important discourse between abstract science and daily existence. People are likely to have very individualized reactions to astrobiology and the evidence it produces; therefore any analysis of a given religious tradition to be viewed only as a starting point for scientific dissemination and public engagement.

Based on the foregoing analysis of the nineteen largest religions in the world, groups of religions can be arranged into the following categories:

- 1) *Strong Anthropocentric Teleology* (Conservative Christianity, Conservative Islam, Conservative Judaism, Zoroastrianism, Primal-Indigenous, and African Traditional and Diasporic Religions);
- 2) *Weak Anthropocentric Teleology* (Liberal Christianity, Liberal Islam, Liberal Judaism, and Sikhism);
- 3) *Weak Teleological Detachment from Humans* (Spiritism, Baha'i, Cao Dai, and Tenrikyo);
- 4) *Strong Teleological Detachment from Humans* (Chinese Traditional Religions, Shinto, Jainism, Rastafarianism, Unitarianism, Buddhism, Hinduism, and Secular/Non-Religious Traditions).

The model presented in this paper posits that the more anthropocentric a religious teleology is (i.e. placing humanity at the core purpose of the universe) the more potential there will be for religious resistance to astrobiological evidence and the possibility of life beyond Earth. The reasoning behind this analytical framework is that religious detachment of human beings from the ultimate end purpose of the universe will provide more elbow-room when adherents are asked to share the cosmic stage with the possibility of life, past or present, elsewhere in the universe.

Previous survey research lends support to this anthropocentric teleology model of religious resistance to astrobiological evidence. One of the first quantitative studies on the subject was William Sims Bainbridge's 1983 "Attitudes Toward Interstellar Communication: An Empirical Study" [9]. This study examined social and ideological factors that influenced support for CETI ("*Communication with Extraterrestrial Intelligence*") among 1,465 American college students. One of the most salient findings of the survey was that only 38% of Protestants felt that "we should attempt to communicate with intelligent beings on other planets", compared with 41.8% of Jews, 43.8% of Catholics, and 50.3% of those claiming no religious affiliation. Even more to the point, the study found that the more conservative Protestants were, the more likely they were to oppose CETI, with born-again evangelical Protestants being the most resistant [9].

In a book published in 1997, Albert A. Harrison examined interviews conducted with twenty-one theologians by Michael Ashkenazi of the Ben Gurion University and found that many Eastern religions such as Chinese Traditional Religion, Buddhism, and Hinduism would be receptive to the idea of extraterrestrial life while fundamentalist Christians would be most likely to be resistant to such evidence ([10], p. 297).

The “Peters ETI Religious Crisis Survey of 2008” [11] asked respondents from seven different religious traditions, as well as non-religious people, to consider whether “Official confirmation of the discovery of a civilization of intelligent beings living on another planet would so undercut my beliefs that my beliefs would face a crisis.” The religious groups represented in the study were Catholic, Evangelical Protestants, Mainline Protestants, Orthodox Christianity, Mormon, Jewish, Buddhist, and Non-Religious. The findings show that Jews, Catholics, and Evangelical Protestants agreed or agreed strongly more than the other groups with 11%, 8%, and 7% respectively. 4% of the orthodox Christian category agreed or agreed strongly with the proposition, along with 3% of Mainline Protestants; 0% of Mormons, 0% of Buddhists, and 1% of non-religious people agreed.

In responding to the proposition, “Official confirmation of the discovery of a civilization of intelligent beings living on another planet would so undercut the beliefs of my particular religious tradition that my religious tradition would face a crisis”, the highest response rate of “agree, or agree strongly” came from Catholics at 22%, Jews at 17%, and Evangelical Protestants at 14%. The lowest agreement, again, came from Mormons at 0%, Non-Religious at 3%, and Buddhists at 0%. 99% of Buddhists “disagreed, or disagreed strongly” with the proposition, thus recording the lowest number of responses, (1%) in the category of “neither agree nor disagree” [11].

A Vakoch and Lee study conducted in 1997 compared American and Chinese college student reactions to the possibility of extraterrestrial contact and found that the “more anthropocentric students from both countries were ... less open to the existence of extraterrestrial life than were their less human-centered counterparts” ([12], p. 4).

The “Alexander UFO Religious Crisis Survey” [13] polled religious leaders of the Roman Catholic, Protestant, and Jewish traditions and found that even within the more anthropocentric religions there is reason to expect successful religious absorption of astrobiological evidence overall. In response to the proposition: “Genetic similarities between mankind and an advanced extraterrestrial civilization would challenge the basic religious concepts of man's relative position in the universe”, 6% of Roman Catholic leaders agreed or agreed strongly, compared to 9% of Protestant respondents and 11% of Jewish respondents. Another question posed was whether “The discovery of another intelligent civilization would cause my congregation to question their fundamental concepts regarding the origin of life”, to which 12% of Protestant leaders, 15% of Roman Catholic leaders, and 0% of Jewish leaders either agreed or agreed strongly.

While there is cause for overall optimism in these survey results for the ability of even the more anthropocentric religions to absorb astrobiological evidence, there has, to date, been too much research attention paid to:

- 1) religious leaders (especially towards elite philosophical theologians, whose highly-academic opinions are refined and removed not just from the laity, but even from the professional class of religious leaders on whose behalf they claim to represent their religions);
- 2) Western religions, absent a comparative analysis to Eastern traditions; and
- 3) Extraterrestrial Intelligence (ETI), to the exclusion of astrobiological signatures and simple Extraterrestrial Life (ETL).

While a Western perspective has dominated the literature on religious interaction with astrobiology, what analyses that have been done concerning non-Western world religion lend credence to the theory of correlation between anthropocentric teleology and resistance to astrobiology. In a Workshop Report on the Philosophical, Ethical, and Theological Implications of Astrobiology, Dr. Francisca Cho compared Eastern and Western thought on the topic of astrobiology in a paper entitled, “An Asian Religious Perspective on Exploring the Origin, Extent and Future of Life.” While the paper focused primarily on the

Buddhist and Daoist perspectives, the methodology of the paper asserted that these perspectives were representative of some central differences between Eastern and Western religious thought, namely how Eastern religious thought on “the nature and creation of the universe often avoids or neutralizes the tensions that characterize science and religion in the West” ([14], p. 208). For example, the existence of the world, and all operation of things in the world, is taken for granted by Indian and Chinese philosophy, and thus are not in need of a creating and intervening god ([14], p. 209).

Perhaps most germane to this study, Dr. Cho explains that in Eastern thought “heaven represents a conscious and moral agent, though never an anthropomorphic deity or a creator god” ([14], p. 210). For example, in the Buddhist tradition the “world is a monistic, continuous cosmos in which human activity and life is not significantly different from other existing things ... [which Dr. Cho found to be in contrast with] the Western privileging of human life, particularly of human reason and intelligence” ([14], p. 210). “According to Cho, Buddhism would ask that we be skeptical of the distinctions we make between sentient and insentient life” ([14], p. 211).

In contrast, the body of literature working in the other direction addressing more Western, more anthropocentric religions identifies anthropocentric doctrines and raises concerns over their potential discord with the astrobiological endeavor. Addressing the potential for anthropocentric religious disharmony, Ernan McMullin summarizes the issue as follows: “... such a discovery [of life elsewhere] would challenge the belief that the origin of life on Earth required a miraculous intervention on God’s part. It would do so for two reasons. First, as we have seen, the discovery would strengthen the case for an evolutionary origin of the first life as a consequence of the ordinary processes of nature. Second, those Christians who believe that the first terrestrial life must have had a miraculous origin would be likely to link that life to the economy of earth, to human well-being” ([15], p. 157; *see also*, [16]).

In its most extreme form, religious anthropomorphic teleology, perhaps most saliently represented by Christian fundamentalism, stands in direct confrontation with the possibility of life beyond Earth. One commentator notes that “They [“fundamentalist Christians”] are so sure that extraterrestrial intelligences do not exist that they think that any message from space, or even any evidence of extraterrestrial life, must be a fake fabricated by demonic creatures in their struggle against the faithful” ([16], p. 24).

3. Conclusion

The intent of this paper has been to predict what characteristics of religion have the potential to give resistance to astrobiology and the evidence it produces. A survey of the anthropocentric teleological orientation of each of the nineteen largest religions in the world was conducted to predict whether human centered doctrines have the greatest potential for religious resistance to astrobiological evidence. A current review of the literature and survey research on the subject suggests that indeed there is reason to believe that anthropocentric teleology is a strong predictor of potential resistance to astrobiological endeavors and evidence. While even anthropocentric religions have great promise to absorb such evidence, religions that are more detached from a human-centered purpose of the universe promise to be even more readily adaptable to the potential of life existing beyond Earth.

Given the tendency for past research to focus on Western religious traditions, particularly on Christianity, future research on the intersection of religion and astrobiology should strive to provide more survey coverage of Eastern and smaller world religions. Additionally, more attention should be paid to lay religious adherents, as opposed to the elite opinion of theologians. There also exists a need for more nuanced survey questioning on the possibility of bio-signatures and simple microbial life, and not just the hot-button issue of ETI.

References

1. Bahm, Archie J., *The World’s Living Religions: A Searching Comparison of the Faiths of East and West*, Jain Publishing Company, Fremont, CA, 1992.
2. Hinnells, John R. (ed.), *A New Handbook of Living Religions*, Blackwell Publishers Inc., Cambridge, MA, 1997.

3. Kennedy, Richard, *The International Dictionary of Religion*, Crossroad, NY, 1984.
4. Adams, Charles J. (ed.), *A Reader's Guide to the Great Religions*, 2nd Ed., The Free Press, NY, 1977.
5. Rice, Edward, *Eastern Definitions: A Short Encyclopedia of Religions of the Orient*, Doubleday, NY, 1978.
6. Schuhmacher, Stephan and Gert Woerner (eds.), *The Encyclopedia of Eastern Philosophy and Religion*, Shambhala, Boston, 1989.
7. Leeming, David, *A Dictionary of Asian Mythology*, Oxford University Press, NY, 2001.
8. Kardec, Allan, *The Spirit's Book: The Principles of Spiritist Doctrine*, Brotherhood of Life Books, Albuquerque, NM, 1989.
9. Bainbridge, W. S., Attitudes Toward Interstellar Communication: An Empirical Study, *Journal of the British Interplanetary Society* 1983 **36**:298-304.
10. Harrison, A. A., *After Contact: The Human Response to Extraterrestrial Life*, Plenum Press, NY, 1997.
11. Peters, Ted, The Peters ETI Religious Crisis Survey, 2008.
12. Lee, Y. and D. Valkoch, Reactions to Receipt of a Message from Extraterrestrials: A Cross-Cultural Empirical Study, 48th *International Astronautical Congress*, Turin, Italy, 1997.
13. Alexander, V., The Alexander UFO Religious Crisis Survey: The Impact of UFOs and their Occupants on Religion, *The Bigelow Foundation*, 1994.
14. Bertka, C., Roth, N., and Shindell, M. (eds.), DoSER Workshop Proceedings, *Workshop Report: Philosophical, Ethical, and Theological Implications of Astrobiology*, American Association for the Advancement of Science, Washington, D.C., 2007.
15. Dick, Steven J. (ed.), *Many Worlds: The New Universe, Extraterrestrial Life & the Theological Implications*, Templeton Foundation Press, Philadelphia, 2000.
16. Genta, Giancarlo, *Lonely Minds in the Universe*, Praxis, NY, 2007.