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Review

The implications of the discovery of extra-terrestrial life for religion

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This paper asks about the future of religion: (i) Will confirmation of extra-terrestrial intelligence (ETI) cause terrestrial religion to collapse? 'No' is the answer based upon a summary of the 'Peters ETI Religious Crisis Survey'. Then the paper examines four specific challenges to traditional doctrinal belief likely to be raised at the detection of ETI: (ii) What is the scope of God's creation? (iii) What can we expect regarding the moral character of ETI? (iv) Is one earthly incarnation in Jesus Christ enough for the entire cosmos, or should we expect multiple incarnations on multiple planets? (v) Will contact with more advanced ETI diminish human dignity? More than probable contact with extra-terrestrial intelligence will expand the Bible's vision so that all of creation—including the 13.7 billion year history of the universe replete with all of God's creatures—will be seen as the gift of a loving and gracious God.

Keywords: extra-terrestrial intelligence; extra-terrestrial life; Peters Extraterrestrial Intelligence Religious Crisis Survey; creation

1. Introduction

What would be the impact on religious belief systems should we Earthlings wake up one morning and find ourselves keeping company with extra-terrestrial neighbours? What challenges to existing religious beliefs might be raised?

Conventional wisdom seems to suggest that terrestrial religion would collapse under the weight of confirmed knowledge of extra-terrestrial intelligence (ETI). Because our religious traditions formulated their key beliefs within an ancient worldview now out of date, would shocking new knowledge dislodge our pre-modern dogmas? Are religious believers Earth-centric, so that contact with ETI would de-centre and marginalize our sense of self-importance? Do our traditional religions rank us human beings on top of life's hierarchy, so if we meet ETI who are smarter than us will we lose our superior rank? If we are created in God's image, as the biblical traditions teach, will we have to share that divine image with

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our new neighbours? In sum, would confirmation of the existence of ETI cause terrestrial belief systems to collapse? And if terrestrial religious belief systems collapse, will theologians find themselves out of a job?

In what follows I plan to ask: (i) Will confirmation of ETI cause terrestrial religion to collapse? My answer will be: no. Or, perhaps a bit more cautiously: insufficient evidence exists to forecast such a collapse, and what evidence we have suggests endurance. As evidence, I will report the findings of the Peters ETI Religious Crisis Survey. I will conclude by identifying some specific doctrinal beliefs that may require rethinking on the part of religious intellectuals, the theologians. I will raise four additional questions: (ii) What is the scope of God's creation? (iii) What can we expect regarding the moral character of ETI? (iv) Should Christians affirm that God's incarnation in Jesus on Earth suffices for the entire cosmos, or should we expect multiple incarnations on multiple planets? (v) Will contact with more advanced ETI diminish human dignity? I will speculate on the doctrinal challenges to Christian thinkers; yet, I can imagine that when dealing with creation and human nature Jewish and Islamic scholars may sense a kinship in facing these intellectual challenges.

2. Will confirmation of extra-terrestrial intelligence cause terrestrial religion to collapse?

A few years ago, I decided to put the conventional wisdom to a test. Along with my Berkeley research assistant, Julie Louise Froehlig, I devised a survey: the Peters ETI Religious Crisis Survey [1,2]. I had read of a previous survey conducted by Victoria Alexander, the results of which suggested that no calamity with religion would result from contact with ETI [3]. We refined and broadened the Alexander approach. The Peters ETI Religious Crisis Survey received more than 1300 responses worldwide from individuals in multiple religious traditions. It became clear that the vast majority of religious believers, regardless of religion, see no threat to their personal beliefs caused by potential contact with intelligent neighbours on other worlds. When we asked respondents to distinguish between their own personal beliefs and the beliefs of the religious tradition to which they adhere, anxiety rose just slightly that their religious leaders might face a challenge. Still, religious adherents overwhelmingly registered confidence that neither they as individuals nor their religious tradition would suffer anything like a collapse.

We then asked respondents to forecast what would happen with religion in general, with religious traditions other than their own. What is startling is that respondents who self-identify as non-religious are far more fearful (or gleeful?) of a religious crisis than are religious believers.

In figure 1 (Question 3), note the consistency of the dominance of the third bar, 'disagree/strongly disagree'. The short bars are 'strongly agree/agree' and 'neither agree nor disagree'. This shows how Roman Catholics, evangelical Protestants, mainline Protestants, Orthodox Christians, Mormons, Jews and Buddhists right along with the non-religious fear no threat to their personal beliefs.

When we turn away from one's own personal beliefs and ask respondents to forecast what will happen to the world's religions, including beliefs other than one's own, something startling is revealed (figure 2 (Question 5)). What might

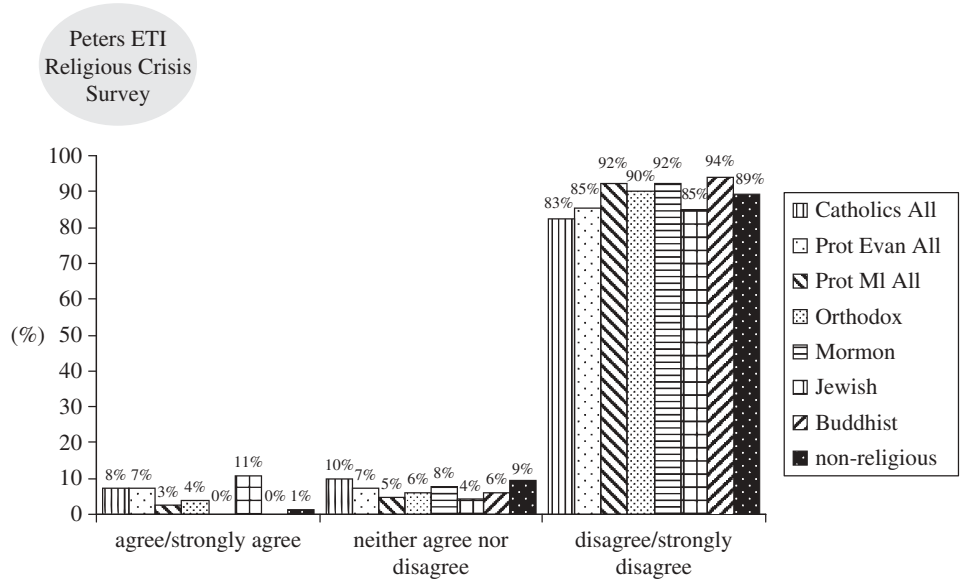

Figure 1. Question 3. Official confirmation of the discovery of a civilization of intelligent beings living on another planet would so undercut my beliefs that my beliefs would face a crisis.

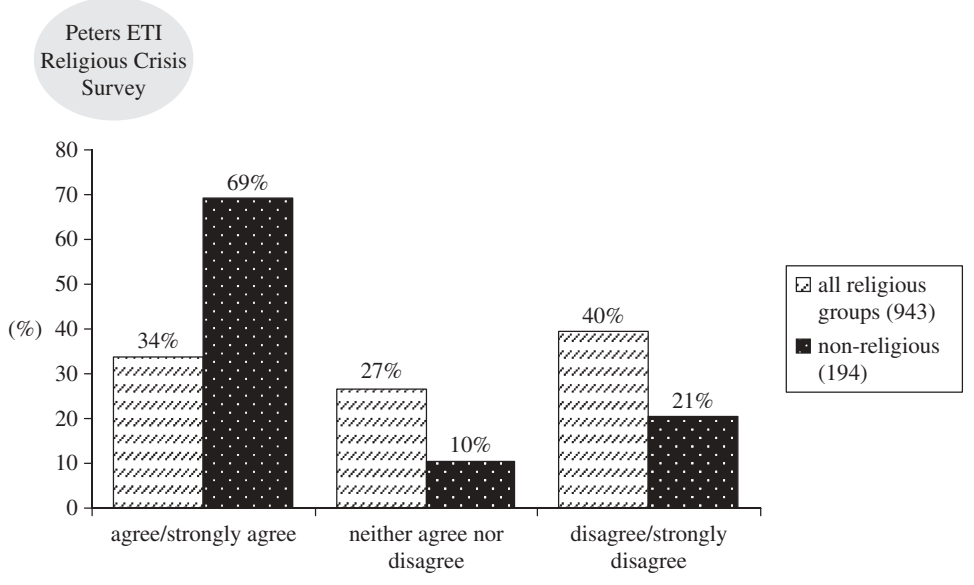

Figure 2. Question 5. Even though my religious (or non-religious) viewpoint would remain unaffected, contact with extra-terrestrials would so undercut traditional beliefs that the world's religions would face a crisis.

this signify? It might signify that the conventional wisdom is the construction of non-religious persons who are making predictions about what will happen to religious persons.

In summary, such survey evidence requires us to acknowledge that religious believers themselves do not fear that contact with ETI will undercut their beliefs or precipitate a religious crisis. It suggests that what passes for conventional

wisdom may be the product of what non-religious people say about religious people. The theologian will need to ask: just how much credence should be accorded to a conventional wisdom constructed by a non-religious belief system? My cautious answer is: none.

3. What is the scope of God's creation?

Now, let us turn to the specific beliefs which might be challenged at the detection of extra-terrestrial intelligence. Traditionally, the Christian theologian has sought to provide a rationally comprehensible picture of creation as the gift of a loving God. In addition, the theologian has sought to give an account of the human condition embedded as it is in the wider natural kingdom replete with evil, suffering and death. The theologian has also told the story of God's gracious efforts to redeem the created order through incarnation and the promise of a renewed creation, a story persuasively propagated by the Holy Spirit. What are the new conceptual challenges [4]? Let us begin with asking about the scope of creation.

The biblical Israelites wrestled with the question of the scope of God's reign: does God rule only Israel or the other nations neighbouring Israel? The writer of Exodus made it clear that the God of Israel ruled over the Egyptians, even if the Egyptians did not recognize it. The prophets made it clear that the God of Israel ruled over all the nations, not Israel alone. Since the discovery of the new world—the Western hemisphere—by the European explorers, missionaries have had no difficulty affirming that the God of ancient Israel is the one God of our entire planet. When the word 'creation' is used in contemporary theology, it functions as an ethical term to elicit support for global ecology. It elicits a vision of moral responsibility that is planetary in scope.

When terrestrial attention gets turned towards extra-terrestrial matters, we can forecast that religious leaders will ask: is this global understanding of creation big enough? Probably not. Our planet Earth could not be what it is without receiving energy from the sun 24 h per day, millennia after millennia. And our sun is but one star in our galaxy, the Milky Way, which itself is but one galaxy among the billions strewn throughout a nearly unfathomable universe. Is the God of ancient Israel the creator of our 13.7 billion year old cosmos? I forecast the answer will be: yes.

Even prior to actual detection, religious intellectuals might be ready to ask: is there life elsewhere? No empirical evidence confirms a positive answer. Yet, our scientists are looking. Exobiologists are looking for microbial life within our Solar System, on Mars and the moons of Saturn and Jupiter [5]; and some astrobiologists raise their sights to find simple if not complex life forms on extrasolar planets (see [6,7]). Scientists at the Search for Extraterrestrial Intelligence (SETI) Institute are listening for radio signals transmitted from technologically advanced extra-terrestrial civilizations within the Milky Way [8]. To date, no message has been received. Yet, many among us hope that tomorrow, or the day after tomorrow, we will discover a *Second Genesis* of life elsewhere. Even astronomers at the Vatican Observatory are actively searching for signs of life in space [9,10].

Will a Second Genesis elsewhere belong within the scope of the biblical understanding of creation? How might the theologian go about assessing such an eventuality? We have precedents. For nearly a millennium now, Christian theologians have debated the question of 'other worlds' in the heavens with God's creatures on them. St Thomas Aquinas (1224–1274) followed Aristotle by reasoning that most probably there is but one world of living creatures with Earth at the centre. One generation later, John Buridan (1295–1358) argued on behalf of many worlds. 'We hold from faith that just as God made this world, so he could make another or several worlds' (cited in [11], p. 29). Though differing on their answers to the question of ETI, these two medieval scholastics presumed that the universe with all of its stars and planets belongs within the scope of God's single creation.

Since the pre-modern medieval debate, discussion of the existence and the relevance of extra-terrestrial beings has been ongoing within Western theology down to the present era. 'The extent of the debate is suggested by the fact that, by 1916, more than 140 books (not counting works of science fiction) and thousands of articles addressing this issue had already appeared.... Not least surprising is the fact that authors found ways to marshal extra-terrestrials in support of, or in opposition to, Christianity, deism, atheism, and dozens of other creeds and philosophies' ([12], p. 343).

Some years ago Krister Stendahl, former dean of Harvard Divinity School and later Bishop of Stockholm, attended a US NASA programme dealing with the possibility of extra-terrestrial life. He was asked his reaction to the prospect of encountering ETI. He exclaimed, 'That's great. It seems always great to me, when God's world gets a little bigger and I get a somewhat more true view of my place and my smallness in that universe' ([13], p. 29). Georgetown's John Haught chimes in: 'Contact with ETs would provide an exceptional opportunity for theology to widen and deepen its understanding of divine creativity' ([14], p. 179). With these precedents in mind, I think it is safe to forecast that contact with extra-terrestrial intelligence will expand the existing biblical vision that all of creation—including the 13.7 billion year history of the universe replete with all of God's creatures—is the gift of a loving and gracious God.

Theology is rational reflection on faith; and such reflection incorporates the way our natural world is apprehended by science [15]. Regardless of whether our scientists determine the presence or absence of extra-terrestrial intelligence, sensitive religious thinkers might be ready to encourage our imaginations to grasp how large the universe's real estate is relative to the minute amount of space occupied by what we have come to know as our world. Whether the nearly 500 recently identified exo-planets in the Milky Way or the star systems in distant galaxies are animate or inanimate, this universe could be viewed as the product of God's creative power and loving grace.

4. What can we expect about the moral character of extra-terrestrial intelligence?

What will be the moral character of the alien intelligences we meet? Friendly? Beneficent? Honest? Deceitful? Aggressive? Hostile? Will our extra-terrestrial neighbours be subject to sin? Will they have fallen, so to speak? Or, might the aliens have escaped the scourges that plague us here on Earth?

I suggest that we begin our speculation using two diametrically opposed scenarios, both based on existing assumptions. I label one the *celestial saviour model* and the other the *alien enemy model*. According to the first model, an alleged extra-terrestrial civilization on an extrasolar planet came into existence earlier than we did on Earth. ETI have evolved longer than we have. They have progressed further. They have progressed not only in science and technology, but also in morality and medical care. Being more advanced than we in every respect, ETI come to Earth from our heavens to bring us advanced science, peace on Earth, a long life and prosperity. This model anticipates a secular form of salvation. Elsewhere I refer to belief in ETI salvation as the 'ETI myth' ([1], pp. 109–120).

The model of the celestial saviour is the key for understanding both the unidentified flying object (UFO) phenomenon and the assumptions at work in the field of astrobiology, especially the assumptions made at SETI. The 1951 movie *The Day the Earth Stood Still* depicts an emissary named Klaatu from an extra-terrestrial federation of planets landing in Washington DC in a flying saucer. His mission is to persuade the nations of Earth to cease testing atomic bombs and cease threatening destructive nuclear war. Coming from a civilization in space far more advanced than ours, Klaatu brings to us the opportunity for peace on Earth. Although this was only a fictional movie, the flying saucer cults of the 1950s preached a similar message, allegedly gained from ETI contact. Even today, cults such as the Raëlians preach the same message of secular salvation.

The celestial saviour model depends on the assumption that evolution incorporates progress; and progress incorporates advance in moral achievement; and the ETI have undergone these advances. Albert Harrison tells us what 'advance' means when we speculate about ETI. '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 neighbours will be peaceful, and this should affect our decision about how to respond to them' ([16], p. 312).

One of the principal voices articulating the SETI mission has been Frank Drake (see [17,18]). Drake encourages us to search the stars for a civilization of aliens that are far more technologically advanced than we are. If aliens have evolved further and progressed further than we Earthlings, they may be able to bring us blessings such as advanced science, the elimination of poverty, and medical services that will offer us greater longevity. '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' (cited by [19], p. 5). Drake's model includes optimism regarding the solution to 'sociological' problems such as poverty and energy while giving us a leap forward in medicine. What Drake believes is that science is salvific, and heavenly science would be even more salvific than Earth's science. This is the celestial saviour model of ETI at work.

At the opposite end of the spectrum, we find the alien enemy model. This model is more characteristic of science fiction novels and movies, especially in the era immediately after the Second World War. The Orson Wells *War of the*

Worlds plot has been repeated in numerous versions over the last 80 years; and perhaps it provides the paradigm for the alien enemy scenario. Accordingly, an extra-terrestrial civilization looks like an enemy nation out to conquer Earth. We Earthlings, then, must find a hero who can muster terrestrial resources to defend our planet and preserve our way of life. In *War of the Worlds*, the hero is a virus that makes the space aliens sick. In other cases, such as the movie *Independence Day*, it is terrestrial military action that brings down the enemy in the skies. What may be significant here is that the alien enemy model dominates fiction, whereas the celestial saviour model is much more familiar to UFO believers and to scientific researchers.

Suppose we split the middle. Suppose we hypothesize that, when contact is made, the new situation will be ambiguous—that is, it will have the potential for enhancing what is good and it will have the potential for wreaking war and destruction. Astrobiologist Chris Impey articulates what we know from experience: 'Capable of individual acts of great beauty and kindness, we are also collectively aggressive and shortsighted' ([20], pp. 308–309). Might this apply to aliens as well?

It is reasonable for us to surmise the likelihood of ambiguity based upon our terrestrial experience, wherein the human condition replete with sin and suffering is inextricably embedded in our relation to the natural domain from which we have evolved. If Darwinian theory regarding the recent arrival of *homo sapiens* after a long struggle for existence is correct, then violence, suffering and death pre-dated and partially defined who we are as the human race. Our social and psychological dimensions are derived from, though not reducible to, our physical substrate. So, if living creatures on exoplanets share the same or the similar physical substrate, might they also share the ambiguity between the good and the evil that we are familiar with? Might we include our new extra-terrestrial neighbours within the scope of what theologians call 'the fall'? This would be the direction that Christian anthropology would most probably lead us.

Inclusion of ETI within the fall is debatable. On the one hand, Thomas O'Meara OP opines that 'another race...might be free of both [sin and evil]' ([21], p. 26). On the other hand, Robert John Russell cautiously argues that the circumstances of our alien brothers and sisters would be similar to ours, namely, ambiguous. 'I predict that when we finally make contact with life in the universe ...it will be a lot like us: seeking the good, beset by failures, and open to the grace of forgiveness and new life that God offers all God's creatures' ([22], p. 66).

If such a hypothesis is tenable, then how might this influence our celestial saviour and alien enemy models? Let me suggest three implications. First, it would significantly qualify our hopes for a celestial saviour. Yes, visitors to Earth from an extra-terrestrial civilization just may prompt leaps forward in terrestrial science and technology and concomitant benefits in medical care; but we would be delusionary if we expect aliens to bring a secular form of salvation that will heal all human ills. To fuel human hopes for celestial salvation from ETI risks falling into idolatry; and it would set us up for grave disappointment.

Second, the alien enemy model would be reinforced but with some qualifications. An alien civilization may include its own leaders who are high minded and virtuous, and who seek to enhance peace and wellbeing wherever their space ships land. Our experience on Earth is that from time to time

such high-minded individuals lift up an inspiring vision and enlist widespread support for making life on Earth more safe, wholesome and healthy. Yet, such virtuous leaders cannot proceed successfully without making compromises with the entrepreneurs, exploiters and militarists who are unable to rise above the predator level in the struggle for existence. What this should elicit in us is awareness of ambiguity. We may have to attend to complexity, nuance, subtlety and guardedness when developing relationships with alien friends and enemies alike.

Third, I forecast that theologians will conclude that intelligent alien beings would most probably be included in God's gracious plan for redemption. George Coyne SJ, former director of the Vatican Observatory, presses this point forcibly. 'How could he be God and leave extra-terrestrials in their sin? After all he was good to us. Why should he not be good to them? God chose a very specific way to redeem human beings. He sent his only Son, Jesus, to them and Jesus gave up his life so that human beings would be saved from their sin. Did God do this for extra-terrestrials?... There is deeply embedded in Christian theology... the notion of the universality of God's redemption and even the notion that all creation, even the inanimate, participates in some way in his redemption' ([10], p. 187). This is genuine redemption, not the pseudo-redemption of the secular celestial saviour.

5. Multiple incarnations?

As we can see from this citation by George Coyne, he affirms that God's salvific action in Jesus Christ on planet Earth applies to space aliens, regardless of which planet they might live on. When it comes to the challenge posed to religious doctrine by the detection of extra-terrestrial intelligence, the following question is most likely to be given intense attention: should Christians affirm that God's incarnation in Jesus Christ on Earth constitutes salvific work for the entire cosmos, or should we expect multiple incarnations on multiple planets? To put it another way, is the incarnation in Jesus of Nazareth species specific, or does God need a special incarnation for each species of sentient beings?

Paul Tillich might provide us with an example of an influential Protestant theologian who welcomes extra-terrestrial neighbours while affirming multiple incarnations. 'How should we understand the symbol "Christ" in the light of the immensity of the universe, the heliocentric system of planets, the infinitely small part of the universe which man and his history constitute?', he asks. 'Our basic answer leaves the universe open for possible divine manifestations in other areas or periods of being.... Incarnation is unique for the special group in which it happens...it is not unique in the sense that other singular incarnations for other unique worlds are excluded' ([23], p. 95f).

Roman Catholic theologian Karl Rahner is sympathetic with the position Tillich espouses. He argues that the possibility of extra-terrestrial intelligent life 'can today no longer be excluded'. Even though he acknowledges 'Christ as the head of all creation', he further speculates: 'In view of the immutability of God in himself and the identity of the Logos with God, it cannot be proved that a multiple incarnation in different histories of salvation is absolutely unthinkable' ([24], vol. XXI, p. 51).

'It is hard to see...why the discovery of nonterrestrial intelligent beings should be shattering to Christian teaching', writes Wolfhart Pannenberg ([25], p. 76). In contrast to Tillich and Rahner, Pannenberg holds that one incarnation is enough for the entire cosmos. Because Jesus Christ is the incarnation of the divine *Logos*, and because the eternal Logos is the medium through which the entire creation has come into being, argues Pannenberg, the significance of the historical Jesus on Earth extends to the history and destiny of farthest reaches of the universe.

The remarks of these three theologians were made in passing. They do not focus carefully and in detail on the question of ETI implications for theology. What these theologians agree on is that the incarnation we have witnessed within our own planetary history is that of the divine Logos, the divine mind through which everything in physical reality has come into being. They presume continuity between this incarnation and whatever exists despite its distance from us. Yet, they find reasons to support opposing positions. Perhaps tomorrow's theologian needs to open up and examine in more detail the question: one incarnation or many?

6. Will contact with more advanced extra-terrestrial intelligence diminish human dignity?

Once we have begun a cross-cultural interaction with our extra-terrestrial neighbours, what might happen? Suppose we engage in philosophical and even religious dialogue. Suppose in this dialogue we are presented with some spiritual insights, which we recognize; and suppose we are challenged by religious commitments that strike us with awe. Suppose we Earthlings begin to recognize that we are outclassed by our superior space neighbours. Might this threaten our theological anthropology, according to which we human beings are created in the image of God? Might we lose our dignity? (see [26], p. 280). On this question we can be helped by reviewing the challenge already posed by astrophysicist Paul Davies and the response of theologian David Wilkinson.

Paul Davies lays down the gauntlet of conventional wisdom. He prophesies that, once contact with an extra-terrestrial civilization is established, terrestrial religion will confront a crisis. Our religious traditions will no longer be able to do business as usual, he says. Is Davies hostile? No, not necessarily. Davies recognizes a warm kinship between science and theology. Both are on a quest, he avers. Both are thirsty for knowledge. Both are hungering to find out what the stars hold for us. He concludes his book *Are We Alone?* with an elegant affirmation of sisterhood. 'The search for alien beings can thus be seen as part of a long-standing religious quest as well as a scientific project. This should not surprise us. Science began as an outgrowth of theology, and all scientists, whether atheists or theists, and whether or not they believe in the existence of alien beings, accept an essentially theological worldview.... [the separation between science and theology] is really only skin-deep' ([27], pp. 90–91).

Davies draws out implications of extra-terrestrial intelligence for the Christian theologian to tackle. Working with a variant of the celestial saviour model of ETI—the idea that longer evolution on another planet will include scientific progress and even a moral advance beyond what we have known on Earth—Davies describes extra-terrestrials as 'beings who are very advanced indeed in all

respects, ranging from technology and social development to an understanding of nature and philosophy. We could expect to be dealing with beings whose wisdom and knowledge are incomparably greater than our own' ([28], p. 33). Based upon this speculation, Davies dares the theologian to grapple with the difficulty this poses. 'The difficulty this presents to the Christian religion is that if God works through the historical process, and if mankind is not unique to his intentions, then God's progress and purposes will be far more advanced on some other planets than they are on Earth. . .. It is a sobering fact that we would be at a stage of 'spiritual' development very inferior to that of almost all of our intelligent alien neighbours' ([27], p. 33). What is sobering, Davies suggests, is that discovery of extra-terrestrial intelligence will diminish the sense of terrestrial human uniqueness. Awareness of ETI might undercut the notion that we are created in the image of God. It might even elicit a sense of human inferiority compared with our more advanced space neighbours. In short, Christian theologians should get ready to humbly recognize that our terrestrial religion is primitive and outdated compared with what we will soon learn from our extra-terrestrial neighbours.

David Wilkinson is a Methodist theologian who also holds a PhD in physics. He is a member of Britain's Royal Astronomical Society. Wilkinson is convinced that we are not alone in the universe. We share the universe with other intelligent beings. He asks Davies' challenging question in his own words: 'would the discovery of life elsewhere in the Universe so contradict the central beliefs of Christianity that it would bring it crashing back to the grave?' No, he answers. 'For the vast majority of the Christian church, the existence of extra-terrestrial intelligence is not a big deal' ([28], p. 116).

Then comes the dignity question: will we human beings lose our special status before God? Wilkinson reaffirms that we human beings on Earth are created in God's image. We bear the *imago dei.* We are loved by the same God who created every star system in this magnificent universe. Our smallness or remoteness notwithstanding, we are God's beloved creatures. No future interaction with extra-terrestrials will alter this theological fact. 'Extraterrestrial intelligence does not pose a problem to the Christian belief that men and women are special in the eyes of God. . .. Davies is pointing out a problem, but it is not a problem for biblical Christianity' ([28], p. 124).

Wilkinson does not appeal to human superiority to make his argument. Rather, he develops the idea of non-exclusivity. We terrestrial human beings can claim to be special in God's eye without denying divine love and concern for other intelligent beings living elsewhere. The existence of a more advanced extrasolar civilization does not preclude our being an object of divine concern. Contact with alien intelligence will not disenfranchise us from the imago dei. 'What Davies fails to distinguish is that a divine origin for intelligence or consciousness can happen within the physical process and can be unique without being exclusive' ([28], pp. 124–125).

A related but distinguishable issue is this: what if ETI have a superior spirituality or an alternative set of religious doctrines? How big a threat is this? Because Davies relies upon his assumptions regarding evolutionary progress, he sees religion as natural. If alien evolution has lasted longer and progressed further, alien religion is likely to be more advanced. Alien religion might become attractive to us because it offers an instant leap forward. We will be tempted to give up previously cherished beliefs.

Wilkinson, in contrast, does not ground his beliefs in the natural development of religious or spiritual sensibilities. Rather, he bases his theological position on revelation—biblical revelation. What Wilkinson learns from the Bible is not subject to falsification by more progressive spiritualities. 'Christianity's central claim is not a spiritual evolution which will take us closer and closer to God as our knowledge increases.... Christianity recognizes that our fundamental need is not a super religion, but a reconciliation which we cannot achieve for ourselves' ([28], p. 127). At the heart of the Christian faith is belief in a divinely initiated redemption, an action of a gracious God on behalf of a fallen cosmos. This includes redemption of the extra-terrestrial 'thugs' in the alien enemy model. This message of salvation coming from God is something we can learn only from revelation; it cannot be produced through spiritual evolution.

Should we fear ETI religion? No, says Wilkinson. We should 'not be afraid of the religion of alien beings.... The belief that God has revealed himself in a supreme way, frees one to look for that which is of God outside that particular revelation. Christians should expect to learn new things about God from an encounter with aliens' ([28], p. 128). In sum, Wilkinson would agree with Davies that theologians should be ready to learn from what more advanced extra-terrestrials might have to say to us; but Wilkinson does not fear the superiority of ETI. What I would add is that the theologian should re-examine carefully just why we believe in human dignity on Earth; and he or she should be ready to implement a non-exclusive strategy when interacting with extra-terrestrial intellectuals.

7. Conclusion

Despite the conventional wisdom, it is not reasonable to forecast that any of Earth's major religious traditions will confront a crisis let alone a collapse should we confirm an encounter with extra-terrestrial intelligence. Theologians will not find themselves out of a job. In fact, theologians might relish the new challenges to reformulate classical religious commitments in light of the new and wider vision of God's creation. Traditional theologians must then become astrotheologians. Perhaps in preparation of this eventuality, the time now is ripe for some speculation. What I forecast is this: contact with extra-terrestrial intelligence will expand the existing religious vision that all of creation—including the 13.7 billion year history of the universe replete with all of God's creatures—is the gift of a loving and gracious God.

References

1 Peters, T. 2008 *The evolution of terrestrial and extra-terrestrial life.* Goshen, IN: Pandora Press.
2 Peters, T. & Julie L. F. 2008 Peters ETI Religious Crisis Survey. See http://www.counterbalance.org/search/search.php?query=Peters+Religious+Crisis+Survey&search=1.
3 Alexander, V. 2003 Extraterrestrial life and religion. In *UFO religions* (ed. James R. Lewis), pp. 359–370. Amherst, NY: Prometheus Books.
4 Peters, T. 2003 Exotheology: speculations on extra-terrestrial life. In *Science, theology, and ethics*, ch. 6, pp. 121–136. Aldershot, UK: Ashgate.
5 Race, M. 2007 Societal and ethical concerns. In *Planets and life: the emerging science of astrobiology* (eds W. T. Sullivan, III & J. A. Baross), pp. 483–497. Cambridge, UK: Cambridge University Press.

6 NASA. 2003 *Astrobiology roadmap.* Moffett Field, CA: NASA Astrobiology Institute, NASA Ames Research Center. See http://astrobiology.arc.nasa.gov/roadmap/roadmap.pdf.
7 McKay, C. 2000 Astrobiology: the search for life beyond the Earth. In *Many worlds*: *the new universe, extra-terrestrial life and the theological implications* (ed. S. Dick), pp. 45–58. Philadelphia, PA: Templeton Foundation Press.
8 Tarter, J. C. 2000 SETI and the religions of the universe. In *Many worlds*: *the new universe, extra-terrestrial life and the theological implications* (ed. S. Dick), pp. 143–149. Philadelphia, PA: Templeton Foundation Press.
9 Ariel, D. 2008 Vatican: it's OK to believe in aliens. Associated Press, 13 May 2008. See http://news.yahoo.com/s/ap/20080513/ap_on_re_eu/vatican_aliens.
10 Coyne, G. V. S. J. 2000. The evolution of intelligent life on earth and possibly elsewhere: reflections from a religious tradition. In *Many worlds*: *the new universe, extra-terrestrial life and the theological implications* (ed. S. Dick), pp. 177–188. Philadelphia, PA: Templeton Foundation Press.
11 Dick, S. J. 2000 (ed.) *Many worlds*: *the new universe, extra-terrestrial life and the theological implications*. Philadelphia, PA: Templeton Foundation Press.
12 Crowe, M. J. 2000 The plurality of worlds and extra-terrestrial life. In *The history of science and religion in the western tradition: an encyclopedia* (ed. G. B. Ferngren), pp. 342–343. New York, NY: Garland Publishing.
13 Berendzen, R. (ed.) 1973 *Life beyond Earth and the mind of man.* Washington, DC: NASA Scientific and Technical Information Office.
14 Haught, J. 2003 *Deeper than Darwin.* Boulder, CO: Westview.
15 Mascall, E. L. 1956 *Christian theology and natural science: some questions on their relatedness*, *Bampton lectures*. London, UK: Longmans.
16 Harrison, A. 1997 *After contact: the human response to extra-terrestrial life.* New York, NY: Plenum Press.
17 Drake, F. 1961 *The Drake equation*. See http://www.activemind.com/Mysterious/Topics/SETI/drake_equation.html.
18 Drake, F. & Carl S. 1997 The search for extra-terrestrial intelligence. *Sci. Am.* (6 January 1997). See http://www.sciam.com/article.cfm?id=000B35F3-A4B2-1C59-B882809EC588ED9F&print=true
19 Richards, D. 2003 Interview with Dr Frank Drake. *SETI Institute News* 12:1; First Quarter, 5.
20 Impey, C. 2007 *The living cosmos: our search for life in the universe.* New York, NY: Random House.
21 O'Meara & Thomas F. O. P. 1999 Christian theology and extra-terrestrial life. *Theol. Stud.* **60,** 10–30.
22 Russell, R. J. 2000 What are extra-terrestrials really like? In *God for the 21st century* (ed. R. Stannard), pp. 65–67. Philadelphia, PA: Templeton Foundation Press.
23 Tillich, P. 1951–1963 *Systematic theology*, vol. 3. Chicago, IL: University of Chicago Press.
24 Rahner, K. 1961–1988 Natural science and reasonable faith. In *Theological investigations*, 22, vol. XXI, pp. 16–55. New York, NY: Crossroad.
25 Pannenberg, W. 1988–1991 *Systematic theology,* vol. 3. Grand Rapids, MI: Eerdmans.
26 Russell, R. J. 2008 *Cosmology from alpha to omega.* Minneapolis, MN: Fortress Press.
27 Davies, P. 1995 *Are we alone? Implications of the discovery of extra-terrestrial life.* New York, NY: Penguin.
28 Wilkinson, D. 1997 *Alone in the universe?* Crowborough, UK: Monarch.