
WAYS OF VIEWING AN EVOLVING WORLD AMIDST ECOLOGICAL DESTRUCTION

Ernst M Conradie

Department of Religion and Theology

University of the Western Cape

Abstract

In an earlier contribution on the use of the term 'worldview' in various theological discourses I commented on the confusing connotations attached to the term in neo-Calvinism, the sociology of knowledge, African theology, 'science and theology' and 'religion and ecology'.¹ This contribution builds on that earlier one by raising the question whether the category of 'worldviews' can perhaps help to hold together the categories of evolution and religion – while doing justice also to an ecological awareness.² The conclusion is a negative one, namely that this is unlikely, given the conceptual confusion over what a 'worldview' entails. Nevertheless, it at least indicates the terrain where contestation takes place.

Key Words: Ecology; Evolution; Evolutionary Biology; Abraham Kuyper; Religion; Worldviews

On the Attractions of seeing Things in a New Way

In his recent 2018 Nelson Mandela Annual Lecture former US-President Barack Obama recognised the role of seeing things in a new way. He recalled the grace and generosity with which Mandela embraced former enemies and commented that it was not just the subjugated, the oppressed who were being freed from the shackles of the past: "The subjugator was being offered a gift, being given a chance to see in a new way, being given a chance to participate in the work of building a better world."³ It seems that the fittest who survived 27 years in prison do so by embracing their former enemies!

Such wisdom is perhaps epitomised by emeritus Archbishop Desmond Mpilo Tutu (a Nobel Peace laureate with Obama and Mandela). In articulating his vision of a common humanity (ubuntu) he is never shy of repeating that it matters how we see one another, namely as part of God's family. It alters one's behaviour to see the beggar as a brother, the prostitute as a sister, the rapist as an uncle and the torturer as a fellow citizen. Tutu portrays such a vision as nothing less than God's dream.⁴

The need to see the invisible is widely recognised in the biblical roots of Christianity, in Greek philosophy, and in indigenous African culture alike.⁵ It also forms part of common

¹ See Conradie (2014a).

² This contribution follows from an invited paper for a workshop on "Distinguishing Science and Metaphysics in Evolution and Religion", held at the Lorentz conference centre in Leiden, 27-31 August 2018. It was attended by scholars from the fields of evolutionary biology, philosophy, religious studies and Christian theology, including Christians of various persuasions, Muslims, Jews, militant atheists, agnostics, and secular critics alike.

³ For a transcript of this speech (17 July 2018), see <https://www.dailymaverick.co.za/article/2018-07-18-obamas-speech-at-the-2018-nelson-mandela-annual-lecture/>.

⁴ These are recurring themes in Tutu's writings. See especially Tutu (2005), also Kaoma (2013).

⁵ See especially Taylor (2000) on the notion of a 'primal vision', also Balcomb (2014).

human experience. After all, one cannot see someone's personality, friendship, love, a university, a country or indeed the world as such. Moreover, the power of a moral vision to confront the might of Empires is unmistakable.⁶ Ways of seeing things can change the world (contra Marx?). This underlies the belief expressed by the Global Social Forum that "a different world is possible". Or in the poetic words of Arundhati Roy: "Another world is not only possible, she is on her way. On a quiet day, I can hear her breathing."⁷ Indeed, what is possible exceeds what is actual exponentially.⁸

This is also what inspires the Christian liturgy,⁹ namely to slowly learn to see the world through God's eyes – with a sense of compassion and therefore justice. Through the liturgy Christians learn to see the world in the light of the Light of the world – noting that we cannot actually see light, but this light illuminates the world around us. For the down-trodden throughout history it is hard to unlearn the message that it is money, not love, that makes the world go round.¹⁰ Their daily experiences reinforce the opposite, namely that might rules over right. It therefore requires lengthy church services to learn to see the world through God's eyes. For the ruling classes it may be even harder to see the world in that way – but they scarcely have time for such lengthy liturgies.

What will attract media attention is money, political power, intelligence and education, physical power, skill and perhaps beauty, especially if put to use for doing evil. Such an ethos was of course notoriously expressed by the exponents of social Darwinism with their rallying call to recognise the significance of a struggle for "the survival of the fittest", warmly endorsed by capitalist philanthropists such as Andrew Carnegie and John Rockefeller.

In his book *Salvation Means Creation Healed: The Ecology of Sin and Grace*, Howard Snyder identifies various 'warped' views of nature that has an ecologically destructive impact.¹¹ These include social Darwinism and the capitalist view of nature in terms of 'natural resources' that are available for excavation and exploitation for the sake of economic 'development'. It also includes romanticised views of nature as 'oh so beautiful' where the shadow side of pain, suffering, degeneration, death and extinction; the view of nature as something that is essentially inferior to which value must be added (culture); and the view of nature as something so sublime that it ought to be treated with reverence, if not worshipped. What difference does it then make to see the world as God's creation, the universe as God's child?¹²

In short, seeing things (even the world as such) in a particular light matters (it has a material impact), perhaps for the better, but possibly also for worse.

⁶ See especially Rasmussen (2013).

⁷ See Arundhati Roy, "Confronting Empire", <https://ratical.org/ratville/CAH/AR012703.html> (accessed 17 October 2017).

⁸ Robert Ulanowicz (2009:120-121) illustrates this with some calculations: Given that there are some 10^{81} atoms in the universe and 10^{25} nanoseconds in the history of the universe, the number of atomic events that have taken place in history is in the order of 10^{106} . Yet, there are 10^{870} possible configurations of only four hundred distinct elements. It follows that the overwhelming majority of potential configurations can never occur. The possible is vastly larger than the actual. The fraction of configurations that are repeated in a continuum is vanishingly small.

⁹ On liturgical cosmology, see especially the work of Gordon Lathrop (2003), also Conradie (2015:51-59).

¹⁰ For the notion of "what makes the world go round", see my essay on pneumatology and ecology (Conradie 2012). Movement is unmistakable, including evolutionary change, but the direction of such movement requires discernment – of the signs of the time but also of the *vestigia Dei*.

¹¹ See Snyder (2011:42-45).

¹² On the counter-intuitive nature of the confession that this world is the creation of this Triune God, see Conradie (2014b, 2015), also Fensham (2012).

On the Many Flaws of Adopting a View of the World

Despite the attractiveness of the category of a moral vision and, inversely, the much-needed ability to recognise flawed views of the world, the very notion of adopting a worldview (seeing the world) remains highly contested.¹³ Let me mention the following contestations:

- Firstly, the obvious has to be stated, namely that viewing the world is impossible. One may watch a game of soccer but one cannot see ‘soccer’. One may adopt a worldview but one cannot view the world as it were at a distance if one necessarily participates within it. Any notion of the world as such is socially constructed,¹⁴ selectively based on a complex set of factors, including knowledge, philosophies (e.g. notions of time and space), beliefs, culture and values. Any worldview remains incomplete, broken, distorted, misshaped. It imposes some order and is therefore an exercise in the use and abuse of power. However, this cannot be avoided.¹⁵ There is only one thing that is worse than adopting a particular worldview – and that is to pretend not to have adopted one at all, to be blind for the assumptions that we make about the world in which we are embedded.¹⁶
- Secondly, for some the problem is precisely associated with social constructivism. It may be true that different cultures adopt distinct views of the world but there seems to be a degree of implied relativism. The proverbial Flat Earth Society may have a view of the world supported by plausibility structures, associated with guilds, initiation rituals, gurus, institutional structures and the like, but such a view is clearly flawed. The same applies to the failure to recognise the evolutionary history of the human species. How, then, does the social construction of reality relate to scientific insights? The underlying problem is intertwined with the long-standing inability to relate cosmological notions of time on the basis of the movements of the sun and the stars (already analysed by Aristotle) and the psycho-social experience of the fleeting nature of time (as articulated by Augustine). Paul Ricoeur states this bluntly: “we must ... admit that a psychological theory and a cosmological theory [of time] mutually occlude each other to the extent they imply each other.”¹⁷
- Thirdly, there is an odd ambiguity in the term worldview: is the focus on viewing the world or on viewing the viewing? There is no point in adopting a worldview if that becomes a blindfold disabling one to view the *world*. This is a typical flaw in neo-Calvinist discussions of the concept worldview.¹⁸ The desire to make Christian beliefs relevant to other spheres of society yields little more than the articulation of a set of

¹³ This section draws from Conradie (2014a).

¹⁴ See already Berger & Luckmann (1967). See also the sophisticated analysis of six cosmologies embedded in diverse civilisations by Galtung (1996). He defines the cosmology (or *Weltanschauung*) of a civilisation as “collectively held subconscious ideas about what constitutes normal and natural reality” (1996:211).

¹⁵ Timothy Morton even argues that “the concept *world* is no longer operational”. He regards the socially constructed term ‘world’ as rather anthropogenic and is content to accept “the end of the world”. He argues that this end already happened and even offers precise dates for that, i.e. 1784 (the patenting of the steam engine) and 1945 (the tests and use of nuclear bombs). Instead, he suggests that the Anthropocene announced the encroachment of what he calls hyper-objects (things that are massively distributed in space and time because they outscale humans), given his commitment to object-oriented ontology. Indeed, “The ‘world’ as the significant totality of what is the case is strictly unimaginable, and for a good reason: it does not exist.” See Morton (2013:1, 6, 108). In this contribution I heed Morton’s warning but maintain that the social construction of reality still matters.

¹⁶ See Conradie (2014a).

¹⁷ Ricoeur (1988:14).

¹⁸ See Wolters (2005).

reformed doctrines (e. g. on God's sovereignty, the presumed goodness of the created order, the impact of sin and the reign of God¹⁹). Clearly, Christian perspectives on the world underdetermine the available data so that such a worldview cannot be derived from biblical principles alone.²⁰ It seems that the religious zeal to transform the world in "every square inch" of society may conceal world-blinkers or even world-blindness instead of a worldview? To regard Christianity and the theory of evolution as "two mutually exclusive systems"²¹ has undoubtedly aggravated a disregard for evidence of biological evolution.

- Fourthly, others would insist that the problem is already implied in the visual metaphors employed. The visual seems to assume a degree of distance, radicalised through scientific empiricism in the wake of the European Enlightenment.²² What about the other senses? Why privilege the eye? Is feeling (the sense of touch) not even more significant in order to be in touch with reality? And is the ear not more spiritual than the eye,²³ to be open to the word of forgiveness and promise?
- Fifthly, it seems easier to describe a worldview (in the sense of the tacit assumptions of how things hold together) *other* than one's own – in a different culture or a different historical period. A worldview is scarcely something that can be conceptually developed with full coherence, doing justice to science, the economy, social relations, ethics, aesthetics and religion. To articulate one's own worldview (which cannot be individual in any case) has to reckon with the sub-conscious world of material interests. We do not see the world as it is; we see the world as we are.²⁴ Who is the subject that holds a worldview? A sub-culture, culture, society or an entire civilisation? Moreover, who typically employs the category of worldview? A hermeneutics of suspicion is required here. In South Africa in the 20th century the term worldview was used most often by the neo-Calvinist proponents of apartheid theology.

Finally, in philosophy of science there remains contestation over the role of "myths, models and paradigms".²⁵ To be sure, all data are theory laden, but many still adhere to some form

¹⁹ The philosopher Arnold Loen (1946:1) famously maintained that he did not know whether his work, *De Vaste Grond*, is best understood as philosophy or theology.

²⁰ This was already recognised by Herman Bavinck in his Stone lectures (1908/1909) where he developed the notion of a "philosophy of revelation" i.e. an attempt by Christians to reflect on the significance of God's whole revelation, including the natural world. In his contribution to a volume *After Worldview* (Bonzo & Stevens, 2009), James Olthuis recognises what is at stake. In criticising his own earlier work, he says: "For even though I relativized a worldview by situating it as a medium always informed and shaped in a two-directional movement between faith commitment and all of the other dimensions of human life, a worldview still has too much the feel of a more or less polished instrument, a kind of concrete steel bridge, a pair of glasses that, if kept tightly ground, will allow its wearers to make sense of life, giving definite shape and form to the often murky and confused world of experiences that is reality" (Olthuis 2009:86-87).

²¹ Kuyper (1998:412).

²² Tim Ingold's formulation is eloquent: "Rather than thinking of ourselves only as observers, picking our way around the objects lying about on the ground of a ready-formed world, we must imagine ourselves in the first place as participants, each immersed within the whole of our being in the currents of a world-in-formation: in the sunlight we see in, the rain we hear in and the wind we feel in. Participation is not opposed to observation but is a condition for it, just as light is a condition for seeing things, sound for hearing them and feeling for touching them" (Ingold, 2011:129). It may therefore be appropriate to emphasise various ways of being in the world (or world formation) as the context within which any notion of viewing the world (or worldviews) may emerge (see Balcomb, 2013:viii).

²³ For a critical discussion, see Conradie (2016a).

²⁴ See Rasmussen (2013:76).

²⁵ Borrowing from the title of Barbour (1974).

of critical realism. The deeper question remains over the role of metaphysical assumptions in constructing scientific theories.²⁶ This is evident from a) cosmological debates over $T=0$ (e.g. Hoyle's proposal for a "steady state cosmology" that fits his atheist assumptions), b) ongoing critiques of scientific reductionism (e.g. in discourse on science and religion, often in response to sociobiology), c) debates over the respective roles of bloody competition and social cooperation in natural selection and d) the question whether natural selection is the only or even the main driver of the evolution of species (e.g. vis-à-vis niche construction). It would be inappropriate to deny such a role of metaphysical assumptions but this does not resolve the question how scientific cosmologies, (religious) worldviews and metaphysics are related to each other. Arguably, there is no physics without metaphysics, but metaphysics is not possible without physics either.

There is an obvious need for conceptual clarification here but given the widely diverging ways in which the term 'worldview' is used, such clarity remains beyond the horizon.

Evolution, Worldviews, Ecology: The Curious Case of Abraham Kuyper

Is the category of 'worldview' perhaps the key to explore the linkages between evolution and religion in such a way that it carries fruitful ecological connotations? Put differently, is the tension between conflict and cooperation, between the brutal struggle for the survival of the fittest and ecological symbiosis, a matter of 'seeing' and 'seeing as'? Do we see the world through the eyes of Thomas Hobbes and Niccolò Machiavelli or through the eyes of Jean-Jacques Rousseau and William Wordsworth? Given the critique of the use of the term worldview above, but also its inevitability, one should not expect too much in this regard. The best way forward is perhaps to consider some contrasting proposals for holding together these three concepts. In this section I will describe Abraham Kuyper's position and contrast that in the next section with some others.

In his famous Stone lectures (1898) Kuyper described Calvinism as a 'life-system' – which he contrasted with paganism, Islamism and Romanism in terms of relationships with God, 'man' and the world. He argues that the development of science presupposed a cosmos that does not fall prey to the freaks of chance but develops from a firm order, for Kuyper according to the divine decree that underpins faith in the unity, stability and order of things. Calvinism therefore cannot but foster a love for science.²⁷

In an important rectoral address on evolution a year later (20 October 1899) Kuyper vehemently contrasted the "pseudo-dogma of Evolution" that regards the triumph of the strong as the only way to higher development and the Triune God's mercy for the weak, i.e. the 'kleine luyden'.²⁸ His target here is social Darwinism that "not only *excuses* the violent eradication of the weak but makes it a matter of principle, a *duty* of the strong".²⁹ He distinguishes between the fact of the evolution of species (which he accepts) and the (reductionist or 'mechanistic'³⁰) worldview within which this is interpreted (seeking to explain all organic life in terms of what is inorganic and drawing ethical implications from that³¹). This distinction between the 'fact' of evolution, Darwinian and other theories of

²⁶ See e.g. the thorough discussion in Russell (2002).

²⁷ Kuyper (2007:114-115).

²⁸ See Kuyper (1998:410).

²⁹ Kuyper (1998:414).

³⁰ Kuyper (1998:419).

³¹ Kuyper (1998:416).

natural selection, and ‘evolutionism’ as an encompassing worldview based on such theories, still holds and is often used, for example in a critique of sociobiology. However, Kuyper’s emphasis on the lasting gaps in scientific knowledge is widely abandoned in contemporary discourse on theology and science. His constructive proposal on the assumptions of the Christian faith that are in opposition with evolutionary theory would at least be contested.³²

Kuyper questions attempts to explain all organic life from the inorganic,³³ because the insistence upon ‘spontaneous generation’ is based on a denial of the possibility of divine action, of ‘supernatural’ influence. Likewise, Kuyper questions the abandonment of teleology (*Zwecklosigkeit*) or any sense of purpose, goals or intentionality, and hence some divine master-plan, in the evolution of species. He critiques the attempt to explain the beautiful from the useful in terms of natural selection via sexual preference as reductionist. Evolutionary ethics seeks to explain human morality in terms of physiological, psychological and sociological factors based on desires and interests and does not allow for the recognition of the soul, for human freedom or for a recognition of sin and guilt. Altruism is explained in terms of egoism. The idea of a moral world order, a moral law that governs us and the correlate ideas of righteousness, sin, repentance and atonement are abandoned.³⁴ As soon as such ideas penetrate to the broad masses, Kuyper believes, “humanity will sink back into a horrible sensuality and unbridled barbarism”.³⁵ Instead, it must be insisted that ‘man’ is created in the image of God, that animal nature does not determine our humanity and that “the entire lower cosmos is paradigmatically determined by the central position of man”.³⁶ Finally, Kuyper maintains that ‘monistic’ evolutionary theory must, in principle, oppose features of religion such as the existence of angels, the soul, life after death, and of God and God’s revelation.³⁷ The duality between Creator and creature is abandoned while the immanence of a transcendent Spirit, guiding, inspiring creatures towards an ultimate goal is forbidden ground for evolutionary theory.

Few would agree with Kuyper’s conclusion, namely that “If the theory of evolution is true, then all that humanity has thus far imagined, thought, pondered and believed is a lie. Then the tree of knowledge on whose fruits we have lived thus far must be eradicated root and branch”.³⁸ Or that evolutionary theory is “diametrically opposed to the Christian faith and can erect its temple only upon the ruins of our Christian confession.”³⁹ Kuyper does leave room for an Architect to create species by allowing one species to emerge from another since he would not want to prescribe a particular method, but this still presupposes a divine purpose according to a previously prepared plan.⁴⁰ Nevertheless, the contrast

³² In a recent overview (Conradie 2018) of the “evolving but unresolved” debates on Christian theology and evolution, I identified six such debates, namely 1) on an evolving universe, 2) on the role of chance in natural selection, 3) on human descent, on natural suffering, 4) on the evolutionary roots of evil, 5) on divine election and the survival of the fittest, and 6) on natural selection as explanation for morality and religion. Both Kuyper (1998) and Van den Brink (2017) recognise the fifth of these namely the tension between the emphasis on the reproduction of those fit to survive in natural selection and the triune God’s concern for the weak as one of the main unresolved issues.

³³ Kuyper (1998:416, 419).

³⁴ Kuyper (1998:434).

³⁵ Kuyper (1998:435).

³⁶ Kuyper (1998:438).

³⁷ Kuyper (1998:435).

³⁸ Kuyper (1998:413).

³⁹ Kuyper (1998:439).

⁴⁰ Kuyper (1998:437).

between Christian faith and evolutionary theory remains ‘unimpaired’ and ‘irreconcilable’ so that aesthetics, ethics, religion and theology can do nothing other than “irrevocably condemn the system of Evolution by virtue of the law governing its own life”.⁴¹

One may say that Kuyper’s notion of worldview, in a typically Calvinist way, is primarily concerned with defending God’s sovereignty, that he seeks to acknowledge a historical consciousness in a typically 19th century way, thus allowing for evolutionary change, but that he resists many of the insights on evolution now taken for granted in scientific debates, e.g. on the emergence of the organic from the inorganic and human descent. His vision is certainly ecological in the sense that the breadth of his theology extends to every square inch of society and has a cosmic scope. His concern is for the restoration of the whole created order in order to restrain and overcome the impact of human sin.⁴² However, the very category of restoration is not readily reconciled with the history of the evolution of life on earth.⁴³

Evolution, Worldviews, Ecology: Some recent Proposals

In this section I will contrast Kuyper’s position with more recent schools of thought and some well-known representative figures. I will only mention these, very briefly, to indicate how cosmological visions that seek to hold together evolution, religion and ecology can still go in diverging directions.

- a) The school of socio-biology developed in the 1960s on the basis of the intuition that altruism amongst social species should remain compatible with natural selection as the main driver of the evolution of species. This prompted an exploration, often on the basis of game theory, of the interplay between conflict and cooperation, between selfish genes⁴⁴ and the survival of the most cooperative.⁴⁵ In the case of Edward Wilson such cooperation is extended towards an exploration of human nature,⁴⁶ a recognition of the “social conquest of the earth” (by insects and by humans),⁴⁷ and the need for synthesis (consilience⁴⁸) and wholeness. If there is room for religion in this school of thought (denied e.g. by Dawkins and Pinker⁴⁹), it has to be explained in terms of evolutionary principles (strengthening social cohesion) or could be considered on purely functional grounds as one role player⁵⁰ that could promote environmental conservation.⁵¹
- b) A quite different view of the world is found in the writings of James Lovelock, Lynn Margulis and other proponents of the Gaia-hypothesis. The point of departure is not social species (ants and bees) but planetary systems based especially on comparisons of the atmospheres of Earth, Venus and Mars.⁵² Signs of the emergence of life are

⁴¹ Kuyper (1998:439).

⁴² See the edited volume on the ecological significance of Kuyper’s theology (Conradie, 2011).

⁴³ On the contrast between reformed notions of ‘restoration’ and other equally problematic soteriological concepts such as an Orthodox notion of divinisation, a Catholic notion of ‘elevation’, an Anabaptist notion of ‘replacement’ and a secular notion of ‘recycling’, see Conradie (2015).

⁴⁴ See Dawkins (2006).

⁴⁵ See Nowak & Highfield (2011).

⁴⁶ See Wilson (1978, 2014).

⁴⁷ See Wilson (2012).

⁴⁸ See Wilson (1998:294).

⁴⁹ See Dawkins (2006), Pinker (2009, 2011).

⁵⁰ On religion, see Wilson (1978:169-209; 1998:260-290).

⁵¹ Such conservation is a life-time occupation for Wilson. See, most recently, Wilson (2016).

⁵² See the discussion in Grinspoon (2016:57-81).

correlated with atmospheric changes. Life is regarded as an integrated, self-regulating planetary system with the recognition that such a self-regulatory system can become dysfunctional and disintegrate. The emphasis on competition amongst ‘selfish genes’ for the sake of survival of the ‘fittest’ makes way for an emphasis on symbiosis, on the intertwining of species that depend on each other for their survival. The ecological concern is unmistakable although the focus is not on particular ecosystems or even bioregions but on the “vanishing face of Gaia”.⁵³ The vision is by itself hardly religious in orientation but is warmly, even wildly embraced in pantheist, neo-pagan and also some panentheist circles.⁵⁴

- c) In the wake of Pierre Teilhard de Chardin’s evolutionary cosmology, Thomas Berry and their followers, including Brian Swimme, Mary Evelyn Tucker and many others (mostly Roman Catholics?), have seen considerable ecological significance in telling the story of the universe.⁵⁵ Their reconstruction of this story is based on the latest available scientific information from astrophysics and biological evolution. Despite the anti-teleological stance of much of evolutionary biology, they seek to demonstrate the evolutionary tendency towards increasing diversity, complexity and beauty. Their ecological awareness is born from telling this story, namely to illustrate the fragility but also the generosity and resilience of the evolutionary process. Environmental destruction through climate change and the rapid loss of biodiversity leads to “much beauty, irrevocably lost”. For Berry and others this story has replaced the former function of the Genesis creation narratives to offer a cosmological orientation within which humans can understand their identity and vocation.⁵⁶ Nevertheless, there is an odd retrieval of pre-modern religious wisdom, coupled with an appreciation of, let us say, postmodern quantum cosmology. If so, the problem seems to be the Christian legitimization of the worldview of modernity – which needs to be contrasted with other worldviews.⁵⁷ Either way, how this ‘marriage’ between pre-modern religion and contemporary science is constituted is not always clear, at least not to me.⁵⁸
- d) Such a retrieval of the story of the universe is also found amongst several scholars in the tradition of process philosophy and process theology. They offer an evolutionary vision of the world that seeks to do justice to science, the emergence of religion and an ecological ethos (also emphasising increasing diversity, complexity and beauty), but employ process metaphysics to a lesser or greater extent in order to develop their vision. Each constructs the narrative in a slightly different way to highlight distinct features. Let me mention, with extreme brevity, four examples, mostly influenced by North American debates.

In *On the Moral Nature of the Universe* physicist George Ellis and philosopher Nancy Murphy acknowledge the role of worldviews, recognise ethics and religion as part of reality and therefore open to scientific inquiry, and emphasise (in exemplary Anabaptist fashion) a self-sacrificial kenotic principle at work throughout the history of the cosmos, coming to

⁵³ See Lovelock (2009).

⁵⁴ See the enthusiastic but widely-diverging appraisals by Latour (2017) and Primavesi (e.g. 2000, 2009).

⁵⁵ See especially Berry & Swimme (1992), Swimme and Tucker (2011).

⁵⁶ See especially the more nuanced essays in Berry (2009).

⁵⁷ The term worldview is popular in this context. Mary Evelyn Tucker and John Grimm have edited a volume entitled *Worldviews and Ecology* (1994), produces a series of major edited volumes on world religions and ecology and helped establish the journal *Worldviews: Global Religions, Culture, Ecology*.

⁵⁸ For a critique of this ‘new cosmology’, see especially Sideris (2017:116-145).

fruition in religious awareness.⁵⁹

Likewise, environmental philosopher Holmes Rolston tells the story of the universe in terms of three big bangs (the emergence of the cosmos, of life on earth and of human consciousness).⁶⁰ He counters socio-biological tendencies to underplay religion by demonstrating the role of novelty in terms of the categories of genesis, genes and God.⁶¹ He makes this relevant for thinking about wilderness by not focusing on nature conservation or preservation but by focusing on the projective thrust of ecosystems, that is, not just their ability to maintain equilibrium but to adapt to geological and atmospheric changes.⁶²

Catholic theologian John Haught also employs process categories to develop an eschatological vision of cosmic evolution. Unlike reductionist forms of evolutionary biology and what he calls ‘cosmic pessimism’ in modern science, he insists that nature is ‘seeded with promise’ and is not shy of a theistic emphasis on teleology. We live in an unfinished universe in which we are continuously surprised by its beauty and novelty. The directionality in the cosmic movement from simplicity to complexity signifies the promise in all things. God’s presence allows for directing evolution towards increasing diversity, complexity and beauty, despite what we know about the laws of entropy.⁶³ The destruction of life is a cause of grave concern but the promise of nature is also a source of inspiration to resist such destruction. This is Haught’s version of an eschatological approach to Christian ecotheology.⁶⁴

A rather difference vision is offered by Catherine Keller, for example in her book *Face of the Deep: A Theology of Becoming* (2003). She offers an alternative to the orthodox but gendered power of creation out of sheer nothing by proposing a *creatio ex profundis* that suggests a bottomless process of becoming from the watery *tehom*. Weaving together process categories and deconstructive tools, she portrays “a fluid matrix of bottomless potentiality, a heterogeneous womb of self-organising complexity, a resistance to every fixed order.”⁶⁵

These proposals based on the category of process (or becoming) are obviously better able to do justice to evolutionary history than the more static notions of order, stability and restoration found in, for example, Kuyper’s neo-Calvinism. Whether or not the prescribed adoption of process categories can do justice to the religious insistence on a distinction between Creator and creature remains open for debate.

An Inconclusive Postscript

In an earlier contribution on the diverging notion of worldviews I suggested that there are at least some common characteristics of notions of a ‘worldview’: they tend to place the social construction of reality, that is, an understanding of a) the structure of human societies and b) its moral landscape, within a larger frame of reference that incorporates c) scientific insights and that can d) indicate the place of humanity within the cosmos and e) whatever may transcend the cosmos.⁶⁶ At the same time, a worldview places scientific insights within

⁵⁹ See Ellis & Murphy (1996).

⁶⁰ Rolston (2010).

⁶¹ Rolston (1999).

⁶² Rolston (1988:225, also 2010:158-193).

⁶³ See Haught (2000, 2003, 2006, 2010, 2015). For critical engagement with Haught’s position, see Conradie 2005, 2016b.

⁶⁴ Haught (1993, 2000:145-155).

⁶⁵ See Keller (2003), with reference to text on the dust cover of the book.

⁶⁶ See Conradie (2014a).

a comprehensive system of meaning that can account for the origin and destiny of the world, the forces that govern it, our human place within it and human questions about meaning, suffering and evil. Inversely, such a worldview will shape scientific investigation in multiple ways, including funding, the conceptualisation of projects, research paradigms and metaphysical assumptions that shape scientific theories.

This suggests a twofold interplay already implied in the term, namely between *viewing* the world in the light of something else and viewing the *world* as such (which is, again, impossible). The one is implied in the other: Ways of viewing will enable, influence and distort scientific insights while such ways of viewing will remain implausible without knowledge of the world and what makes the world go round.

Let me now return to the question: Is the category of ‘worldview’ the key to explore the linkages between evolution and religion in such a way that it carries fruitful ecological connotations? Perhaps, but this is a rather tall order, undermined by conceptual confusion over what a ‘worldview’ entails. I may be mistaken here, but one reason why evolution, ecology and religion are not so easily held together is related to the distinction between what is (perception, science, metaphysics), what has been (reconstructions of evolutionary history), what is potential / possible (the art of politics?), what should be (a moral vision), how that could come about (the interplay between the material and the ideal) and what will be (which remains open-ended and unknown, not least in the case of climate change). These have to be held together (perhaps through worldviews), but no one discipline would suffice in this regard. There are, quite understandably, imperialist temptations for each field of inquiry to stretch beyond its own focus. This may add to the existing confusion.

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