Chapter 2

The battle of faith and technology in the Anthropocene: climate alarmism versus eco-modernism – between rupture and next step

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Abstract

Many people today are seriously concerned with global warming because of human actions and, consequently, the liveability of our planet for future generations. In the societal debate, two directly opposing camps face one another in a contest around faith and technology in the Anthropocene. This chapter offers a critical analysis of both by discussing the ideas of two of its prominent exponents, namely Clive Hamilton (for the climate alarmists) and Braden Allenby (for the eco-modernists). The key point of the analysis is that these parties are inescapably caught in a conflict which cannot hope for a resolution. This is because they are rooted in modernity, which disconnects Earth from its relationship with Heaven and the Creator of Heaven and Earth.

Keywords: Anthropocene, climate alarmism, ecomodernism, faith, heaven and earth, modernity, technology

1. Introduction

Let me start with a personal anecdote from my student days in Delft. As a young student in Applied Physics, I took an optional course offered by a Philosophy professor. During one of his first lectures, the latter remarked rather casually about

what he considered as his central task in his teaching. He said something like: 'You are studying here to become engineers. I would like to contribute to your broader academic education. I am a Christian myself, and for me, that means that I do not see *faith* and *technology* as two separate worlds that are completely unconnected. No, technology is not a neutral matter but is supported by a vision of faith'.

Having grown up in the Christian faith tradition, these words obviously must have touched me at the time because they have stuck with me and spontaneously resurfaced in my memory while I was writing this essay. While trying to find my way through the contemporary debate on the Anthropocene, while I was ploughing through an ever-growing pile of literature on the subject, it dawned on me that for many there is something like a shock experience with unmistakably religious traits, a shock experience of power and powerlessness with technology. The foundations of our technological world and human self-understanding have been shaken according to French historians Christophe Bonneuil and Jean-Baptiste Fressoz in their book *The Shock of the Anthropocene* (2016, p. 25): "It is our own model of development, our own industrial modernity, which, having claimed to free itself from the limits of the planet, is striking Earth like a boomerang."

At least this much is clear from this quote: the Anthropocene raises fundamental questions. And these do not just concern specific practices or sub-areas of society. No, if we continue along the lines of the authors quoted, the central question is what we should understand under *development* in the age of the Anthropocene that confronts us with the limits of earthly reality. What else can we do but adapt to this? But how then does what we call 'development' in such a world differ from the hopeless existence of the prisoner in his cell, from which there is no escape? And further, if this reasoning is correct, is this then not essentially the death blow of the Baconian project of modernity which, after all, rests on his notion that "Nature is conquered only by obedience"?[1] Ergo, in

1 This much-quoted phrase was written around 1600 by the philosopher and politician Francis Bacon in his *Novum Organum*

the Anthropocene, we have gained one more illusion: victory over nature and the pursuit of greater well-being in a better world must fail, it seems, assuming that we find ourselves in a planetary situation that is fundamentally unchangeable and that we must therefore make the best of it in our earthly misery. Yes, worse still, we have meanwhile even increased our misery; it seems as if in the pursuit of our dream of a better world, we have disregarded the limits of our existence on the planet Earth that we depend on.

As might be expected, other, less alarming noises can also be heard. Globally, two factions are opposed to each other and threaten to divide the whole of society to the bone, in science, politics, and the relationship between rich and poor countries, etc. In this chapter, I want to explore the ideas of the opposing factions, commonly referred to as climate alarmists versus eco-modernists[2]. At its core, it is a struggle over faith and technology in society and how we should relate to the disappointing project of modernity. Or, to quote a climate alarmist, "So the battlelines have been drawn. On one side are those who plan to force Gaia into total submission; on the other are those who believe attempting to do so is the ultimate folly" (Hamilton, 2017, p. 42)

From this philosopher's perspective, the front of the struggle in the Anthropocene lies in the difference in

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I, 3, marking the beginning of what is called 'the new age' or also 'modernity'. The title of this pioneering book is 'a new instrument' for a good reason, it aims to replace an old tool, the organum in Aristotle's writings in which there was little room for an experimental approach to nature. What is characteristic is the turn from science to a practice that wants to take nature seriously, instead of obeying or blindly assuming preconceived, authoritative, and speculative ideas about it.

2 I do not want to get involved here in a discussion amongst climate scientists about climate change as a political-social problem. In his publications, social geographer Mike Hulme (2009; 2023) warns against climatism as a political ideology and misleading alarmist language use. He wants to point out that some scientists are not concerned with understanding nature better, but are mainly focused on 'climate action'. In doing so, they subordinate science to political policy, he rightly notes, and contribute to climate stress in society, especially amongst young people.

attitude towards the pursuit of using technology to make the Earth subservient to human existence. While one side, the eco-modernists, wants to continue this deployment of modernity, the other side, the climate alarmists, seeks a radical reorientation of man and technology. Before we explore the ideas of both parties in more detail, I would like to elaborate on the anecdote that I started with, to bring the spiritual dimensions of the Anthropocene into sharper focus against this background.

2. Faith and technology - between tradition and modernity

I can well imagine that a reader who holds this book in their hands (I will call them Reader 1) was repulsed when I mentioned, of all people, a philosophy professor who presented his students with the idea that technology is not obtainable in isolation but is always supported by an underlying vision of faith. "How so?" Reader 1 mumbles, "I don't see any connection. Faith is what you do in church, and technology is technology. Full stop. It may be true that a believing peasant asks God for a blessing in personal prayer, but that still does not make his farming technique in ploughing, sowing, and harvesting fundamentally different from that of a non-believing peasant. Conclusion: the philosophy professor was telling his students a fable about a world that does not exist: technology is technology and thus has nothing to do with what people believe." Another reader (Reader 2) with whom Reader 1 shares his dissatisfaction, thinks differently about it, and responds by saying: "I get your point, but how hard is the conclusion you draw really? Perhaps you can maintain it for the modern world with which you and I are familiar, but for that reason alone it is still not necessarily applicable to technology in other societies and cultures".

Having arrived at this point in the fictitious controversy, I would like to interject briefly. I think that Reader 2 has an interesting and relevant point. Is modern technology indeed not totally different from technology in traditional or pre-modern societies? To illustrate this, I refer to a compelling

example coming from the North American philosopher, William Barrett (1913–1992). In a study less known outside America, *The Illusion of Technique* (1978), he compares the fishing technique of the Yurok Indians, the original inhabitants of northwestern California in the United States, with modern technology.

> The Yurok Indians are a tribe living on our Pacific Coast who subsist very largely on the salmon that swim out of the ocean into their rivers. Before the season the salmon begin running, the Yurok build a dam to trap the fish in order to ensure a good catch for the winter. The building of this dam is preceded and accompanied by much ceremony and ritual. There are mass enactments of the tribal myths, purification baths, fasting from certain foods, sexual abstinence, and a taboo against certain kinds of incontinent talk. (…)
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> The dam itself is a fairly complex technological achievement; but for the Yurok the rituals that accompany it are as much part of the whole technique of hunting the salmon as the act of building or the preparing of nets and other gear. (…) Thus he comes to think of the fish that are caught as a gift of nature, and even the skill of the fisherman as another such gift. Consequently, the whole hunt is not a sheer self-assertion of the human will against nature (Barrett, 1978, pp. 17–18).

It is possible that Reader 1 was impressed by the culture of the Yurok Indians but has not yet changed their point of view accordingly. They will possibly say something like: 'So what? This example illustrates my point very clearly: the believing Christian peasant who I mentioned remains stuck in an outdated frame of mind and associated rituals of bygone days, such as the days of prayer and thanksgiving for crop and labour, which still recur every year in the list of Christian holidays. These days have no substantive meaning for the agrarian system and are nothing more than an external ritual in our modern society.' Let us assume that this hard stance by Reader 1 stirs up the contradiction in Reader 2 and again stimulates critical rebuttals such as: 'How do we actually determine that a culture

and religion are outdated? What standards apply to it? Anyway, assuming that there are good arguments to be made for it in a particular case, for example, for the Yurok tradition, this does not mean that religion is an outdated phenomenon anyway, including that of the believing peasant'.

Let us end this discussion here. In any case, it is clear that there are serious points of difference that call for continued reflection on the relationship between "faith" and "technology". While Reader 1 defends the prevailing view of modernity that technology in modern society has nothing to do with faith, Reader 2 believes that on this very point, ancient traditions and modernity differ less than Reader 1 believes, indeed that technology is pre-eminently the religion of modernity. In this, he follows David Noble who, in his fascinating book *The Religion of Technology* (1998), has convincingly shown that from the Middle Ages onwards, the development of technology in the Western world is closely linked to its Christian roots. The central stance that Noble defends is that "the emergence of Western technology as a historical force and the emergence of the religion of technology were two sides of the same phenomenon." (Noble, 1998, p. 9). This religion of technology has now spread throughout world society, manifesting itself differently within diverse cultural spheres of influence.

Certainly, Readers 1 and 2 have a serious dispute, but we can also note that they both argue in terms of tradition and modernity. I have deliberately chosen the example of the peasant because it is precisely in that sector of society that tradition or remnants of it have coexisted in various forms with modernity for a very long time. In the past 80 years, i.e. the post-Second World War period, the traditional peasantry has virtually disappeared in the West. British social historian Patrick Joyce, who has impressively described this quiet death in his recent book *Remembering Peasants: A Personal History of a Vanished World* (2024), even calls this one of the most profound transformations of our time. The socio-political developments of recent years in my own country, the Netherlands, and also elsewhere in Europe, show that the agri-industry, in particular, forms the backdrop for enormous tensions and great uncertainty

in the search for a way forward[3]. As is well known, the broader problem behind this is the global climate crisis that has led to the very agricultural sector of society experiencing the shock experience of the Anthropocene which I mentioned above. In the prologue of his book, Joyce rightly remarks in this context that it is precisely the peasant who is the victim of the disappointing progress of modernity: "Many in our time take great interest in the destruction of the planet. While we may all in the end pay a common price for this destruction, peasants have already paid theirs. Not just with environmental destruction and agribusiness in recent decades but over centuries, for the great victims of modernity and progress have been peasants" (Joyce, 2024, p. 5).

3. Faith and technology in the Anthropocene - between rupture (Hamilton) and next step (Allenby)

If my diagnosis is correct, that in the shock experience of the Anthropocene, deeper religious dimensions of our existence are being brought to consciousness, then the question arises as to how this is reflected in the debate currently underway. In it, as mentioned, two schools of thought are opposed to each other, and an important question then is how each of these clashing visions relates to the project of modernity. A shocking experience puts a question mark behind the prevailing views according to which we live, throws all our thinking and actions upside down, and calls for a real search for a new orientation. It should be noted, however, that such a search process takes time and is not completed overnight. It is much more than a mere theoretical exercise, although an indispensable part of it is undoubtedly a critical review of all kinds of ideas and thinking to which the following also seeks to contribute in the outline discussion of two leading spokesmen, Clive Hamilton as representative of climate- or eco-alarmism and Braden Allenby as exponent of eco-modernism.

3 For a more detailed analysis of the transformations in agricultural modernisation, I refer to Chapter VI, 'Farmers between Disappearance and Resistance', in the excellent study by Dutch cultural anthropologist and philosopher Lemaire (2010).

3.1 An initial sounding

To find out exactly what we are dealing with these two, it may help to first return for a moment to the controversy between Readers 1 and 2 about their bone of contention on faith and technology. Suppose we were to ask Clive Hamilton: 'Clive, in whom do you most recognise yourself in your view of the Anthropocene as a philosopher, Reader 1 or Reader 2?' I think he would say without hesitation: 'Definitely not in Reader 1. In his attitude, I detect the spirit of modernity that fails to interest me. At first glance, I think Reader 2 and I would understand each other quite well if we could continue our discussion about the relationship between faith and technology. Setting aside exactly what each of us believes, and potentially important points of difference therein, there is no doubt for me that the world of technology is not separate from people's faith. In the discussion on the Anthropocene, the connection between the two is precisely the crux of the matter for me. My entire reflection is aimed at freeing us from the dominant techno-religion of our culture, even though I certainly do not want to be seen as a techno-hater. In my diagnosis of the Anthropocene, although we have now progressed too far with technology, there is no way back. And now that we have passed the critical point, it is important to differentiate between technology that can be applied on a local scale, such as painting roofs white to reflect sunlight or planting forests, and methods with a planetary scope, such as spraying sulfur particles into the stratosphere.'

So much for this staged mini-interview with Clive Hamilton; let us now explore a few questions for Braden Allenby. 'Braden, I did a little snooping in your Curriculum Vitae and understood that as a professor of *Civil and Environmental Engineering*, you follow an environmental approach to the development of technology and society. From that background, how do you view the controversy between Readers 1 and 2? Incidentally, I have also seen that in your career as an adjunct professor, you have been associated with Princeton Theological Seminary for some time, and I therefore suspect that in your view too, as appeared to be the case with Clive, faith and technology are not separate worlds.' Judging from what I have

read about Braden Allenby, he will not need much time for a spontaneous response. He will presumably say something like: 'You are absolutely right. What people believe is a relevant and also important fact in my approach to sustainable development of technology and society. Industrial Ecology is sometimes described by peers as a "toolbox for sustainable development" and the "science of sustainability". I agree with this description, which is not to say that faith weighs equally in my view in all cases. It depends entirely on what I will call the level of complexity of the technical constellation in question. And for me, as an industrial ecologist, that is precisely a core issue in a scientific and ethical approach to technology in the Anthropocene. Incidentally, we should be well aware that even in earlier times, before the current discussion on the Anthropocene, humans have always used technology to shape planet Earth, albeit unconsciously and on a smaller scale.'

Allenby has written: "The Earth is increasingly a product of human engineering. Up until very recently, however, this engineering process has occurred without conscious recognition; it consists of the sum of human activities, grown to scales unprecedented in the history of the globe" (Allenby, 2007, p. 1)

From this first introduction to Clive Hamilton and Braden Allenby, it can be deduced that the main heading above this section, "Faith and Technology in the Anthropocene", applies to them both, even if it is perhaps already apparent from the foregoing that at least one difference sets them apart in the pitch with which they express themselves. For Hamilton, the Anthropocene is to a much greater extent an existential issue touching his deepest convictions than seems to be the case for Allenby. I have expressed this with the words in the subtitle: "Between rupture and next step". In that respect there is a "rupture" in Hamilton's view of the Anthropocene and also what I mean by the "next step" in Allenby's case, I will try to make clear in the following. The word "between" in this context does not mean that I am concerned with seeking some kind of middle position, a bit of one and a bit of the other. To overcome the conflicting tensions between both positions, it is necessary

to probe deeper into their common spiritual background in Enlightenment thinking, as will become clear later.

3.2 Clive Hamilton - the Anthropocene as a rupture

The debate on the Anthropocene has developed from recently acquired insights in the geosciences. The story goes that Paul Crutzen, a researcher in atmospheric chemistry who was awarded the Nobel Prize in 1995 for his study on the hole in the ozone layer, launched the term "Anthropocene" for the first time at an international conference in 2000 in a discussion amongst geologists on the human-dominated state of planet Earth. Often quoted are the words spoken unexpectedly by Crutzen on that occasion: "No! We're no longer in the Holocene but in the Anthropocene!" (Bonneuil & Fressoz, 2016, p. 15). In retrospect, here lies the start of a much broader discussion than the one amongst geologists on the precise historical periodisation of successive geological eras of the Earth.[4] Indeed, with the introduction of the idea of the Anthropocene, the sharp dividing line between, on the one hand, the evolutionary development of planet Earth and the natural processes involved in it and, on the other hand, the history of man and culture as it evolves on that Earth, falls away.

Precisely this is the cardinal point on which Australian climate philosopher Clive Hamilton has focused his thinking in his book *Defiant Earth* (2017), elaborating on his *Requiem for a Species* (2011) and *Earthmasters* (2013), two earlier studies focusing more specifically on the role of human action in the climate crisis. As a philosopher, he believes that the idea of the Anthropocene in its implications goes far beyond a purely natural science discussion in Geology of the transition from one phase of Earth's history to the next, as so many others have preceded it. This transition also marks a radical break in our thinking about man-and-world, whose scope we hardly fathom yet, Hamilton says, and in his view marks the end of modernity

4 See Bonneuil and Fressoz, (2016) and Lewis and Maslin (2015) for an overview of the geological debate on defining the Anthropocene as a new geological epoch. See the previous chapter of this book as well.

and the beginning of a new era, that of a tormented Earth and of man-and-earth in mutual dependence. Our history is linked to the fate of Earth being in the hands of man and the ongoing development of modern technology. This implies "a break in Earth history of the greatest profundity; it divides the life span of Earth into two halves ontologically. In other words, the being-nature of the object itself has changed" (Hamilton, 2017, p. 7).

Thus, for Hamilton, the idea of the Anthropocene as a new era in the history of man-and-earth is not just an interesting idea of an inspired climate philosopher but, he argues, rests on a hard scientific foundation from which one simply cannot escape. Under the heading "Earth System science", he writes, amongst others, the following about this in the first chapter of *Defiant Earth* (Hamilton, 2017):

> The idea of the Anthropocene was conceived by Earth System scientists to capture the very recent rupture in Earth history arising from the impact of human activity on the Earth System as a whole.

I ask the reader to stop and read the above sentence again, taking special note of the phrases "*very recent rupture*" and "*the Earth System as a whole*." (…) It is of the utmost importance to understand that the "Anthropocene" is not a term coined merely to describe the continued spread of human impacts on the landscape or further modification to ecosystems; it is instead a term describing a *rupture* in the functioning of the Earth system as a whole, so much so that the Earth has now entered a new geological epoch. Whatever conclusions that one might draw as to the ultimate causes and the solutions to the Anthropocene, an understanding of the basic science of it must come first (Hamilton, 2017, p. 10).

Further on in the text, Hamilton continues:

> It became possible to conceive the idea of a *human-induced rupture in the functioning of the Earth System* only after the development of the new scientific paradigm

> of Earth System Science, the roots of which lie in new strands of scientific thinking dating from the 1970s and 1980s that coalesced in the 1990s (Hamilton, 2017, p. 10, italics added by me).

In the above quote, I want to zoom in specifically on the italicised words *"very recent rupture"* and *"the Earth System"*, which, also by Hamilton's own admission, form the cornerstone of the idea of the Anthropocene, to which he then returns again and again in his reflections. The phrase "*Earth System as a whole"* refers to a *new object* of scientific enquiry uncovered at the turn of the century with the emergence of Earth System science.[5] Of course, one might say that in ecology as a biological discipline, the scientific study of all kinds of local or regional ecological systems has been going on much longer anyway. This is true, Hamilton admits, but Earth System science is not the same as the total of locally focused ecological studies, some aggregate approach in the ecology of the Earth. Earth System science studies Earth as a total system, i.e. the Earth system as a whole.

Fundamental to the system-theoretical framework of thought that Hamilton uses as base is the distinction between system and environment.[6] Assuming that I have correctly interpreted Hamilton in the foregoing, I conclude that for him the "Earth system" is the most comprehensive system outside which nothing exists as Earth's environment that must be considered in our thinking and actions. And if this conclusion is correct, the question remains for Hamilton: How sure one can be of having, and in principle one can have, a good view of the boundaries of the "Earth system" of which, after all, man himself is part? It is an important question, also for Hamilton himself, in my opinion.[7] For it is precisely with this that the

5 See Lenton (2016) and Barton (2022) on the emergence and development of Earth System science, launched as NASA's interdisciplinary space engineering research programme.

6 See Chapter 3.4 in Strijbos (1988) for a critical discussion of the reversal from Cartesian subject-object to thinking in terms of system environment.

7 This issue of boundary demarcation is the central problem in C. West Churchman's systems thinking, of which I have given a brief discussion in Strijbos (n.d.). For a broader discussion, see Ulrich,

claim of an all-embracing *"very recent rupture"* and the idea of the Anthropocene stands or falls.

There should be no doubt that Earth's natural environment has been severely degraded by human activity in many places. This has been known and denounced by many since about the middle of the last century. More and more in our time, there is a growing realisation that environmental problems have global dimensions, such as greenhouse gas emissions and their dreaded effects on lasting climate change. There is no doubt that from a geological point of view, in the consequences of the collective actions of humans, a "rupture" in the development of Earth's environment is becoming visible, which started the discussion on the Anthropocene. It is a different matter whether it can also be said that this *rupture-1* of a natural science type encompasses at the same time a *rupture-2* concerning man's place in reality. However, the answer to this question cannot be given with the help of natural science. It is therefore necessary to go to the field of humanities, Philosophy and Theology.

The salient point now is that with Hamilton and others, a distinction falls away: "(…) the arrival of the Anthropocene means that human history and geological history have converged (…)" (Hamilton, 2017, pp. 7-8). And this convergence shows that despite all man's attempts to use technology to free himself from the realm of nature, exactly the opposite has happened. The future of our technological world is linked more strongly than ever to the fate of Earth. The "rupture" of the Anthropocene, according to Hamilton, has painfully revealed that the project of modernity, propelled by faith in technology, has placed the existence of man-and-Earth on a path of self-destruction. It is, therefore, the task of Anthropocene thinking to radically break with the climate of thought of the Enlightenment of the 18th century. It must thus break with the ideal of freedom through control in order to discover, from a

W. (2002). "An appreciation of C. West Churchman". (A revised. version of 'C. West Churchman – 75 years,' *Systems Practice*, 1(4), 341-350, in: 'A Tribute to C.W. Churchman,' Werner Ulrich's Home Page, http://wulrich.com/cwc_appreciation.html and http://wulrich.com/downloads/ulrich_2002f.pdf)

new anthropocentrism, that man's claimed freedom is not in opposition to nature but is interwoven into the realm of nature:

> The new anthropocentrism might be misunderstood as close to ecomodernism and its all-powerful Kantian subject. In fact, it is radically different. It is true that both understand humans as occupying the central place with a unique transformative role on Earth; yet ecomodernism remains entrenched in the humanist tradition in which human "spontaneity" and creativity make the future. The new understanding is anti-humanist because it recognizes the hard constraints on world-making imposed by a finite and untameable Earth (Hamilton, 2017, p. 66).

To sum up, we can conclude that, according to Hamilton, the Anthropocene calls for a radical reorientation at the spiritual level, that is, in the vision of being human and the relationship of man-and-Earth. While I agree with Hamilton that the spiritual-intellectual roots of modernity are at stake, I believe that he has failed to break free from them. I will get back to that later. But first, it is necessary to pay attention to Braden Allenby as a representative of eco-modernism, sharply criticised by Hamilton.

3.3 Braden Allenby – the Anthropocene as the next step

I routinely read the newspaper in the morning after breakfast, before tackling my work for the day. On the day of writing this section, I had just read an interview on climate change and water management with the Dutch government's recently appointed Delta Commissioner, Co Verdaas, a part-time professor of area development at Technical University Delft. What immediately caught my attention were the words of the government commissioner, which the interviewers had placed as the headline above the article: "From *just protecting* against water, we are moving towards *living with water*"[8]. In my opinion, this aptly summarises current discussions in the Netherlands on how to deal with Anthropocene issues because of climate

8 Daily newspaper *Trouw*, 23 February 2024:10-11

change. All things considered, we are dealing with an age-old problem in the Dutch delta, the hard and continuous battle against water. Who does not know the saying, both in the Netherlands and abroad: "God created the Earth, but the Dutch made their own land"? Interestingly enough, this saying did not come from a Dutchman, as one might think, but its origins must be attributed to a foreign observer, the 17th-century Scottish theologian James Fraser of Kirkhill (1634-1705), but this only as a marginal note.[9]

What concerns me now is that in the words of Fraser and Verdaas, an image emerges of humankind who, in the misery of their existence, strives to use technology to build a safe and liveable environment. Although one usually thinks of technology first and foremost as material artefacts that humans can use for one purpose or another, the stature of technology in contemporary society is much more complex than a sum of isolated things and processes. Of this complex and layered phenomenon, the book *The Techno-Human Condition* by Braden Allenby and Daniel Sarewitz (2011a) provides an interesting analysis based on a systems model with three successive levels, I, II and III of increasing complexity. At level I, technology concerns the design and construction of material things and processes, such as a car. To be used, however, a car requires a complex system of roads, traffic rules, and other facilities: level II of technology. The ongoing development of technology at levels I and II finally results in level III, the anthropogenic world of Systems Earth. The core of their vision is summed up superbly by the authors the same year in *New Scientist* magazine under the self-explanatory title "We've made a world we cannot control". The 'big idea' of this article is that the problems of the Anthropocene cannot be tackled with the level I and II technology known to us. And this means, the authors conclude, that "(t)he world we are creating thus demands a transition from our almost paranoid societal obsession with Level I certainty and coherence to acceptance that Level III

9 See the article by Frits Niemeijer, published on the website of the professional journal *Vitruvius* (www.vitruvius.nl)

uncertainties and contradictions are the essence of the world we have already made" (Allenby & Sarewitz, 2011b, p. 29).

I agree with Allenby that the classical scientific method – "the favoured child of the Enlightenment", as he calls it – applies to the traditional field of engineers, level I of technology, but not to levels II and III. This understanding of different levels of technology is in line with an interdisciplinary-oriented movement, emerging after the Second World War, aiming to put an integrated scientific approach on the map, crystallising into different types of systems thinking (see Strijbos, 2017). If in its footsteps, some 60 years later, Earth System thinking appeared on the scene, Braden Allenby positioned himself in it with a research agenda in ESEM (Earth Systems Engineering and Management), of which I have provided a broader critical review elsewhere (Strijbos, 2021). In the context of this chapter, I refer briefly to the controversy between Readers 1 and 2 as I outlined in Section 2.

In this controversy, Allenby will, I assume, be particularly drawn to Reader 2. He would say, I presume: 'Certainly, at level I of the three-layer model of technology that concerns the transformation of physicochemical substances, faith plays no role in the design activity. So, to that extent, I share the view of Reader 1. However, it is different at levels II and III, where it concerns design problems of technology in a socio-cultural context. Then people's beliefs in that context, as the example of Yurok culture illustrates, start to play a proper role. The designer is then faced with the question of handling differences in culture and religion as part of the problem. The problems of technology on a planetary scale in the Anthropocene represent a new design space of greater complexity, which therefore calls for expansion of the scientific method.' Allenby might go on, 'My take isn't engineering reductionism; it's that all the things we think are fixed – human nature, ethical and religious systems, natural systems at all scales, language, fundamental values – are increasingly contingent in the Anthropocene, and we don't know how to think about, or manage, a terraformed planet. Recognising that technological evolution has overthrown the status quo is not to segue into technological reductionism; it

is to perceive the outlines of an entirely new environment that we're not close to grasping.'[10]

My issue concerning this argument by Allenby is exactly what I must imagine concerning his idea of extending the scientific method in the Enlightenment tradition. Unfortunately, I have not gained clarity from his publications as to what the 'next step' means substantively and methodologically. It seems logical to make a comparison with the systems thinking on which ESEM builds. In ESEM, I believe, there is a parallel problem. To overcome the technological reductionism of Hard Systems Thinking, alternatives have been launched such as Soft Systems Thinking and Critical Systems Thinking (see Jackson, 1991). Similar to these earlier discussions within the systems movement, Allenby wants to avoid technological reductionism in his approach to ESEM. However, it escapes him that this is only possible by breaking with the Enlightenment's dogma of autonomous reason (see Strijbos & Basden, 2006, Chapter 14). I believe that this then becomes visible in the programmatic elaboration of ESEM at a methodological level, of which, to my knowledge so far, Allenby has given a first interesting impetus in the formulation of several guiding normative principles that I summarise somewhat below:

1. Know from the beginning what the desired (and reasonably anticipated) outcomes of any intervention are, and establish quantitative metrics by which progress may be tracked.
2. Rather than being exogenous to a system, the Earth systems engineer will have to see themself as an integral component of the system, closely coupled with its evolution and subject to many of its dynamics.
3. Whenever possible, engineered changes should be incremental and reversible, rather than fundamental and irreversible.

> An important goal in Earth systems engineering projects should be to support the evolution of resiliency, not just redundancy, in the system (Allenby, 2001, p. 23).

10 Personal communication, 30 October 2023.

What is striking is that these principles relate exclusively to the role of the 'Earth system engineer' in the transformation process, leaving out of the picture the normative determinacy of the 'Earth system' itself and also the role and own freedom and responsibility of other 'Earth system' participants involved in the process. One must therefore fear that the reductionism rightly criticised by Allenby has not yet been overcome with these four principles.

4. A critical stance

In summary, what I have set out so far in this chapter boils down to the fact that the two opposing sides in the Anthropocene are, in fact, embroiled in a high-stakes conflict between two quarrelling siblings both raised in the house of the Enlightenment. While one sibling, the climate alarmist, wants to break radically with her background and seeks salvation elsewhere in a new relationship to the Earth, or rather a new alliance of humankind and Earth as partners, the other sibling clings to modernity's faith in progress in science and technology. To assume a critical stance in this conflict, I would like to recall that the Enlightenment climate of thought is indebted to the tradition of Christianity from which it emerged. It is not feasible here to indicate in a single word how, in the history of the West, in the transition from the Middle Ages to the new era, a dramatic turn in the climate of thought took place. Characteristically, the major themes of the Christian doctrine (creation, fall of man, redemption, faith, and hope) were transformed into a strongly optimistic, anthropocentric view of life in which the focus is no longer on God but on humankind, a view that is cosmocentrically oriented towards the world with humankind at its centre.

This does not immediately mean irreligion or atheism. On the contrary, the aforementioned Francis Bacon, one of the founding fathers of modernity, stood emphatically in the tradition of English Protestantism of his time and aimed not only for innovation in the field of science and technology but also for the role of the church in society. As I have discussed more broadly elsewhere, with Bacon, these two, science and

technology on the one hand, and church and religion on the other, are independent avenues for redemption from the misery of human existence after the Fall (see Strijbos, n.d.). Science and technology serve humans as instruments of self-redemption in their earthly existence, while church and religion focus on man's eternal salvation and reconciliation with God through the work of Christ. In this spirit, the conclusion of Book II, aphorism LII of *The New Organon* (Novum Organum) ends with the words:

> For by the Fall, man declined from the state of innocence and from his kingdom over the creatures. Both things can be repaired even in this life to some extent, the former by religion and faith, the latter by the arts and sciences. For the Curse did not make the creation an utter and irrevocable outlaw. In virtue of the sentence 'In the sweat of thy face shalt thou eat bread' (Genesis 3:19) man, by manifold labours (and not by disputations, certainly, or by useless magical ceremonies), compels the creation, in time and in part, to provide him with bread, that is to serve the purposes of human life.

From the picture sketched here, I think it is possible to draw lines to the controversy between eco-modernism and climate alarmism.

We saw that climate alarmism, as per Hamilton, revolves around a plea for a new anthropocentrism, a reconsideration of our place in our relationship with the Earth. For him, it is certain that in the Anthropocene, humankind exceeded the Earth's limits with modern technology and that a way back to the Holocene era is not possible. His message is that we must break away from utopian visions as per Bacon, "in which humans mimic the God of Genesis by aspiring to a 'second creation' on Earth" (Hamilton, 2017, p. 73). Above all, it comes down to finding a new relationship with Earth, and recognising that we are part of it. With this attitude to life, searching for a liberating spiritual perspective for our times, Hamilton strikes a chord with me. However, what escapes Hamilton, or at least does not explicitly come up for discussion with him, is that the

Genesis story he refers to draws humankind's place in a God-created, indissoluble connection of Heaven and Earth. "In the beginning, God created the heavens and the earth" we read in Genesis 1:1, where in this context 'the heavens' does not refer to the firmament, the starry sky that dominates our existence on Earth, but to heaven as the dwelling place of God and the angelic world created by Him. Thus, in the light of the biblical creation story, the Earth assigned to man as his dwelling place is not a self-contained system, a demarcated 'Earth system' under man's control. Being human on Earth takes place under an open heaven. Hamilton's criticism of the old anthropocentrism of modernity is not radical enough, and his search for a new anthropocentrism remains sadly entangled in modernity's fundamental error of detaching Earth in our thinking and action from its connection with heaven, with God as the origin, being the foundation and meaning of all that is created. As the Bible says: 'For from Him and through Him and for Him are all things. To Him be the glory forever. Amen.' (Romans 11:36).

While Hamilton's stance in the Anthropocene focuses on the spiritual basis of modernity, Allenby, as an eco-modernist, concentrates his attention on the phenomenon of technology, and specifically the stature of technology in the Anthropocene, which he refers to as level III technology. However, he overlooks the fact that the Enlightenment scientific method is not a neutral given but assumes the autonomous subject, detached from the normative relationship with everything else created and with God. Thus, the fundamental fallacy of modernity that I touched on with Hamilton is, so it turns out, also hidden beneath Allenby's reflections on technology (see Strijbos, 2021). The two opposing sides keep each other locked in a hopeless and fruitless conflict. Only when the fallacy of modernity is seen through, a new perspective can open up for a shared vision of the future of the Anthropocene.

5. Conclusion

The search for such a shared vision in the confrontation with Western Enlightenment thinking and its claims of universality cannot bypass Christianity, the church, and theology. The

struggle for faith and technology in the Anthropocene requires no less than a renewed listening to the biblical message and thinking through the relationship of Christian faith and human power with technology. This is what I have sought to contribute to in this chapter.

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