

Facing the Chaos

FACING THE CHAOS

FINDING MEANING IN
THE MODERN AGE

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INTRODUCTION

WHAT HAS BECOME OF THE ANTHROPOCENE?

On Friday 8 March 2024, the Flemish newspaper *De Standaard* published an item that most readers of the paper may have paid little attention to but which immediately had my full attention. The headline at the top of the article was: ‘The printed coffee mugs can go in the bin: we are not yet officially living in the Anthropocene.’¹ That this headline caught my attention was no more than logical. Since I first heard about it from a speaker during a guest lecture for one of my courses in the spring of 2017, the idea of the Anthropocene became increasingly important to me as a key concept to make sense of humanity’s current situation in the world. Indeed, it was something that culminated in the title of the course book for my courses on ‘Perspectives on Religion and Meaning’ (Dutch course title: *Religie, zingeving en levensbeschouwing* (RZL), literally ‘Religion, meaning-giving and life stances’) at KU Leuven that was published in February 2020: *Mens zijn in het antropoceen* (‘Being Human in the Anthropocene’). However, I was far from the only one to use the term ‘Anthropocene’ in the title of a publication. On the contrary, as of mid-October 2024 the catalogue of the KU Leuven University Library contains no fewer than some 15,000 publications with the word ‘Anthropocene’ in the title.

The success of the word ‘Anthropocene’ is a phenomenon of the past 25 years. According to Google Books’ Ngram Viewer, prior to 2000, the word ‘Anthropocene’ occurred only very rarely. In contrast, since 2000, use of the term has increased year after year, with exponential growth especially from, say, 2012 onwards. We can perhaps attribute this success to the influence of Dutch meteorologist and atmospheric chemist Paul J. Crutzen (1933–2021), who is even often cited as the one who allegedly invented the term ‘Anthropocene’. The story goes that, in February 2000, Crutzen, who had been awarded the Nobel Prize in Chemistry in 1995 for his contribution to the discovery of which substances caused the hole in the ozone layer, suddenly proclaimed during a meeting of the International Geosphere-Biosphere Programme (IGBP), a large-scale international research programme on ‘global change’² that we are no longer in the Holocene³ because the world has changed too much under human influence and we have consequently entered a new geological epoch. Crutzen is then said to have named that new epoch ‘the Anthropocene’ on the spot.⁴ ‘Anthropocene’ is a compound of the Greek word for human (ἄνθρωπος, *anthropos*) and the suffix ‘-cene’ used in geology to denote the most recent epochs (from the Greek καινός, *kainos*, ‘new’).⁵ However, the term was not entirely new, something we can observe when consulting the Ngram Viewer. Another scientist, US biologist and geologist Eugene F. Stoermer (1934–2012), had already used it informally during lectures and classes from the 1980s onwards.⁶ Crutzen and Stoermer found each other and published a short article on the Anthropocene in the IGBP’s newsletter in 2000.⁷ Their article was the first drop in the wave of publications on the subject that have since seen the light of day. Indeed, since Crutzen and Stoermer’s publication, the term ‘Anthropocene’ and the depiction of humanity

as a geological power to which it refers has become widespread and widely adopted, not only in a variety of natural sciences, but also in humanities such as philosophy and history, and even in popular culture.⁸

That humanity has a huge impact on the Earth is hard to deny. To illustrate this impact, I turn briefly to the book *The Human Planet* by Simon L. Lewis and Mark A. Maslin, two British scientists affiliated with University College London, among others. *The Human Planet* was an important guide for me in exploring the Anthropocene while writing *Being Human in the Anthropocene*. At the beginning of the book's introduction, Lewis and Maslin list a variety of phenomena that point to humanity's all-encompassing impact on the planet.⁹ Some of the figures may no longer be entirely up to date, but I am only trying to give an impression of our impact here, and finding out for myself how each of the phenomena they mention has developed since then would take me far too long and may also be beyond my expertise. For instance, both scientists report that people worldwide move more soil every year than all other natural processes combined. The same goes for the nitrogen we take out of the atmosphere to make fertiliser, among other things. Furthermore, humankind has already made enough concrete to cover the entire surface of the Earth with a layer two millimetres thick, and microplastics are now in just about all drinking water. Since the start of the Industrial Revolution, humankind has already released more than 2.2 trillion metric tonnes of CO₂ into the atmosphere, which means there is now some 44% more of it in the atmosphere than before. It is estimated that, prior to the agricultural revolution, there were about six trillion trees on Earth. Today, only half of that number remains. Large areas of the Earth's surface are used by humans for growing crops and cattle raising. Every year, humans catch some 80 million tonnes of fish and as many more tonnes are farmed. Populations of non-human animals that are not domestic or farm animals are under pressure and shrinking. Species are disappearing at breakneck speed. If we take the combined weight of all large mammals currently living on the planet, only 3% of that weight comes from wildlife. The rest is made up by humans (30%) and our livestock (67%). A final example that Lewis and Maslin give is that about 245,000 km² of coastal waters have now turned into 'dead zones' where, due to lack of oxygen caused by pollution, life is no longer possible.

The premise of *Being Human in the Anthropocene* was that the fact that humanity has now emerged as a geological power (Lewis and Maslin even talk about a 'geological superpower')¹⁰ gives new urgency to age-old questions. The questions I had in mind here were the big questions of life such as: Who are we? What are human beings? Who do we want to be and who can we become? What is our place in the cosmos? What is true happiness, a good life, wisdom, a meaningful existence? These are obviously questions that people have wrestled with again and again throughout history. Over the centuries,

they have formulated answers to those questions with the help of religions, philosophies, systems of ideas and wisdom traditions. The questions still remain. Each generation seems to have to take them up again. And in doing so, the current generation cannot ignore the Anthropocene and humanity's status as a geological superpower. Indeed, it seems inevitable that the way the Anthropocene will develop will have a major impact on our life and living together, and consequently on what will (still) be possible in terms of happiness and a good and meaningful existence. It is also likely that we will need a good dose of wisdom to steer the Anthropocene in the right direction or even simply survive it. Humans live by grace of stories. We need stories to live and live together. But what stories can and should we tell about ourselves now that we have entered the age of humankind as a geological superpower?

Being Human in the Anthropocene could actually best be understood as an argument for spirituality. Looking back on the book, I cannot but conclude that the implicit premise of the entire project was that the Anthropocene provides an argument for spirituality and also makes it clear that we need spirituality. It therefore seems necessary to explain in this introduction how spirituality was fleshed out in *Being Human in the Anthropocene*. This is also how we will understand it in what follows.

1. WHAT IS SPIRITUALITY?

To elaborate a model of spirituality in *Being Human in the Anthropocene*, I looked to a domain in which the notion of spirituality has taken off, notably healthcare. According to Philip Sheldrake, a researcher who specialises in the study of spirituality, healthcare is a domain in which spirituality is increasingly prevalent.¹¹ The incorporation of spirituality in healthcare is a consequence of the growing understanding that health is more than the adequate functioning of individual organs and body processes. Patients are more than a collection of organs and functions, but form a psychosomatic whole that is also a hub of relationships with diverse others near and far. Health is therefore more than the absence of physical defects, but also has to do with psychological well-being and social integration.¹² A decade or so back, when I was looking for articles on what spirituality actually is, I came across a lively debate on this question in academic nursing journals. In one of these articles,¹³ a so-called concept analysis of the concept of 'spirituality' was undertaken. Rather than coming up with a new definition of 'spirituality' themselves, the authors of the article

examined how the word was defined in various journals and publications in order to arrive at a definition of ‘spirituality’ that brings together the elements frequently present in existing descriptions. This method resulted in the following definition:

“ Spirituality is a way of being in the world in which a person feels a sense of connectedness to self, others, and/or a higher power or nature; a sense of meaning in life; and transcendence beyond self, everyday living, and suffering.¹⁴

Spirituality is thus a well-defined mode of existence characterised by three defining attributes. These attributes are ‘connectedness’, ‘transcendence’ and ‘meaning in life’.¹⁵ By ‘connectedness’, the article’s authors, Weathers, McCarthy and Coffey, mean ‘a sense of relatedness to oneself, to others, to nature or the world, and to a Higher Power, God, or Supreme Being’.¹⁶ They understand ‘transcendence’ as the ability to transcend the self in the here and now (self-transcendence). It refers to ‘the ability to see beyond the boundaries of the self, the environment, and present limitations’ and ‘a capacity to change one’s outlook on a given situation and on life overall’.¹⁷ The third attribute, ‘meaning in life’, is not further explained by Weathers, McCarthy and Coffey. Apparently, they assumed that the expression *meaning in life* is already sufficiently clear as it stands.

Besides the three defining attributes of spirituality, the authors also identified some additional common themes in the literature on spirituality that they used for their analysis of the concept. First, there is agreement that spirituality is something ‘intrinsically human’ or even ‘innate’.¹⁸ In another article on the definition of spirituality published in the same year as Weathers, McCarthy and Coffey’s article, spirituality is said to be ‘a universal human phenomenon’. The title of the article even stated that ‘everyone has it’.¹⁹ Perhaps we should nuance this, though, and make it that everyone possesses spirituality to a greater or lesser extent, or even that everyone has the potential to possess the way of being that we refer to by the term ‘spirituality’. In this context, it is interesting to briefly draw attention to studies on children’s spirituality. British zoologist David Hay (1935–2014) was a researcher who dealt with this. He defined spirituality as a deep awareness of the self and the intimate connection of our self with all that is not-self, and he explicitly described spirituality as a ‘potential’.²⁰ Hay argued that this potential is very strong and vital in young children, but is soon destroyed as they assimilate the culture in which they grow up. He even spoke of ‘the social destruction of spirituality’ in this regard.²¹ The research on spirituality in children thus suggests that young children are actually at an advantage when it comes to spirituality: what they can do spontaneously, adults often have to put a lot of effort into.²² Just think how

easily children merge into the here-and-now in their play, something that often takes adults years of training with difficult meditation techniques. British scholar of children’s spirituality Rebecca Nye gives several more reasons why children are ‘naturally’ more comfortable with spirituality: children, she explains, are at ease with what they don’t understand, because non-understanding is an everyday experience for them, they wonder more easily and are more mystically inclined, they are naturally open and curious, they like to discover new things, are more connected to their feelings and their bodies, and they regularly experience first-hand that language falls short when it really matters.²³ Adults have a much harder time with these things, so it takes more effort for them to realise spirituality. In a way, in order to (re)acquire the way of being that we call ‘spirituality’, adults have to relearn things that they had unlearned since childhood. By the way, it is important to underline that children’s spirituality does not develop by itself either. It is best compared to the ability to speak. That is a universal human and innate ability, but it is only by growing up in an environment where a language is spoken that the language ability effectively develops and a child begins to speak. Similarly, the capacity for spirituality with which a child comes into the world will not develop if it has to grow up in an environment in which that capacity is not nurtured and stimulated in any way (or even thwarted, which is often the case in contemporary society). It therefore seems desirable not to consider spirituality as something a person possesses or does not possess, but to see it as a potential that has been realised to a greater or lesser extent in a person’s life. It is therefore helpful to think of spirituality as a process, as a work in progress all the time.

The definition of Weathers, McCarthy and Coffey, supplemented by the vision of spirituality as potential and process, can be visualised using the image of a spiral making its way out from the centre of a collection of concentric circles. At the centre of the collection of concentric circles is the individual. This may sound literally ego-centric (the self is at the centre and everything revolves around it). However, de facto this is how each of us spontaneously experiences the world: inevitably, we experience reality with ourselves as the centre and everything else happens around us. Each individual is nevertheless embedded in wholes that are increasingly encompassing (these are the ever-expanding concentric circles). First, each individual is part of small (overlapping or not overlapping) wholes (a family, an extended family, a circle of friends, a neighbourhood, a work environment, associations). These smaller wholes are then encompassed by increasingly larger wholes: a city, a region, a province, a country, a culture (or even several subcultures), a continent and ultimately humanity as a whole, the Earth and the universe as the most encompassing concentric circle. Outside this circle we can then even place ‘something higher’ (God, for example), but in the understanding of spirituality elaborated here, spirituality does not stand or fall with the existence or non-existence of God. Each of the wholes to which the individual belongs, from the closest to the most encompassing, exerts an influence on the individual.

We can represent this influence using arrows running from the edge of the various circles to the centre of the concentric circles. Spirituality then consists in a spiral movement from inside to outside, where the self takes in more and more of reality and realises and lives out its connection to the ever larger wholes (which is actually there, because the wholes a person is a part of influence that person anyway). Spirituality then consists in the process by which persons increasingly transcend themselves and thus start living in ever greater connectedness with ever greater wholes. The result of this process is then meaning-finding. ‘Meaning-finding’ seems to me a better term than ‘meaning-giving’ because ‘meaning-finding’ suggests too strongly that individuals can give meaning to existence on their own in isolation from everything and everyone. The word ‘meaning-finding’ makes it clear that ‘meaning in life’ is something that falls to us, something that happens to us and that happens when we try to realise our connectedness to ever larger wholes.

A second additional theme on which, according to Weathers, McCarthy and Coffey, there is consensus in the literature is that spirituality is something ‘highly personal and unique’ to each individual. Third, a person’s spirituality changes over the course of life, as individuals get older or when they face profound events.²⁴ We might not expect the development of one’s spirituality to always move towards more spirituality, but that traumatic events, such as the disease or death of a beloved one, can also lead to a (temporary or otherwise) decline in one’s spiritual growth. A final additional theme noted by Weathers, McCarthy and Coffey concerns the consequences of spirituality. Spirituality, the three researchers state based on the literature they have analysed, is associated with a variety of positive effects: it alleviates pain, promotes a sense of well-being, and enhances the ‘ability to adapt and cope with adversity’. Spirituality also creates ‘a sense of peace’, ‘inner strength’, and a wide range of ‘positive feelings such as hope, motivation, empowerment, love, joy, compassion, belonging, and assurance’.²⁵ It seems to follow from this that there are therefore good reasons to promote and encourage spirituality. Indeed, spirituality seems to have positive effects on the individual. This naturally raises the question of how to nurture our spirituality and what sources of spiritual growth are available to us.

Here it is important to underline that spirituality – as a way of being in the world characterised by connectedness, (self)transcendence and finding meaning – should not be confused with a vague or abstract cosmopolitanism that would imply that a person is at home everywhere and nowhere. On the contrary, spirituality requires being rooted in order to be able to reach out to others and the wider world. In this context, then, I refer to the mosaic on the Jozef Vounck Square in the centre of Leuven. The mosaic shows a tree with the following text next to it: ‘deeply rooted, widely branched’. This is a nice image of what spirituality means. Spirituality also concerns individuals in their totality. It has to do with what people think (their ‘head’), what they feel (their ‘heart’) and what they do (their ‘hands’). Spirituality therefore has a theoretical side. This theoretical aspect of spirituality

can also be referred to as ‘life stance’ or ‘philosophy of life’. These expressions are possible English translations of the Dutch word *levensbeschouwing*, which the Dutch dictionary *Dikke Van Dale* describes as a ‘conception of life, its value and essence, how it should be conducted’.²⁶ Wikipedia defines *levensbeschouwing* as ‘a vision of life: what life means, what its value is and how it should be lived’.²⁷ Thus, a person’s life stance is how that person views human beings, the world and society. A life stance thus includes a view of humankind, the world and society. It answers questions such as: What is the place of humans in the cosmos? What makes life worth living? What does the ideal society actually look like?

An alternative term for ‘life stance’ is ‘ideology’. ‘Ideology’ is defined by the *Oxford English Dictionary* as ‘a systematic scheme of ideas, usually relating to politics, economics, or society and forming the basis of action or policy; a set of beliefs governing conduct’.²⁸ However, it is important to stress that the term ‘ideology’ is usually used in a different way from the term ‘life stance’. ‘Ideology’ often has a negative connotation and is usually used to denote the ideas of a social group you disagree with and wish to distance yourself from. ‘Ideology’ then has the connotation of false consciousness where the views of the group in question are, at least according to the person mouthing the word ‘ideology’, disconnected from reality. However, it is in the interest of the group advocating the ideas that its ideas be taken for granted and natural by as many people as possible. After all, the power and privileges of the group in question depend on it. The group in question then looks at reality through tinted glasses and does not see certain aspects of reality (or refuses to see them, as seeing them would entail too many undesirable consequences), while the aspects in question are obvious to the group’s opponents and for them a matter of ‘common sense’. In public debate, therefore, the description ‘ideological’ functions as a rhetorical device to counter an opponent. It is always the others who think ideologically. No one will be inclined to say this of themselves. So, although ‘ideology’ and ‘life stance’ are actually synonyms, ‘life stance’ has the advantage of being a more neutral and descriptive term.

Moreover, the importance of life stances can hardly be overestimated. Indeed, a person’s life stance determines what that person considers important and worthwhile. A life stance can be both collective and individual. People generally share their views on life and on humankind and society with the smaller and larger groups to which they belong. At the same time, we can also distance ourselves from the groups we belong to and develop a personal view of life. Furthermore, it is also important to underline that a life stance often remains implicit and unspoken. It operates below the surface and as such remains invisible. However, it can be useful to bring life stances to the surface, otherwise we run the risk of fundamentally misunderstanding public debates, failing to see that the debate is actually about something else (because there are more fundamental beliefs at stake that are not expressed as such).

Since spirituality has a theoretical aspect (how we situate ourselves in the world is partly determined by how we think about that world), spiritual growth will not be possible without

growing in our thinking about the world. However, it would be one-sided to think that spiritual growth can be purely a result of thinking differently. After all, how a person thinks about life and the world, i.e. a person's outlook on life, is rooted in profound experiences, deep-seated emotions, long-standing habits and belonging to groups. You don't change something like that just by a bit of thinking alone; it requires formation of the entire person. It may even be the case that we actually need to begin by starting to behave differently. This seems to be the lesson of quite a few spiritual traditions that emphasise certain practices and techniques (meditation, for example) that are meant to transform and change the thinking and feeling of those engaging in the practice. Within the framework of this book, the emphasis is necessarily on the intellectual aspect of spirituality. Its importance, although limited, cannot be underestimated. In this regard, I concur with the view of Philip Sheldrake, the spirituality scholar whom we have already encountered above, that spirituality must grow in conversation and confrontation with the growth of human knowledge in general. Moreover, Sheldrake further argues, our spirituality must be challenged by the dramatic events of twentieth-century history (he explicitly mentions the Holocaust and Hiroshima). I also wish to endorse this point made by Sheldrake.²⁹

Now that we have a view of what is meant by 'spirituality' in this book, we can return to the idea of the Anthropocene and consider how the depiction of a new geological epoch characterised by humanity as a geological superpower was ultimately not recognised, as I learned on 8 March 2024 via *De Standaard*.

2. HOW THE ANTHROPOCENE WAS FINALLY NOT RECOGNISED

At the time I wrote *Being Human in the Anthropocene*, research into a possible recognition of the Anthropocene as a new geological epoch was still in progress. A first step towards this was taken in 2008 when the Geological Society of London's committee on stratigraphy³⁰ overwhelmingly agreed to a proposal to further explore the idea of the Anthropocene.³¹ This was still far from an official acknowledgement, just a confirmation of the fact that a lot of geologists thought it was an interesting idea (which was also reflected in the fact

that the term was starting to gain acceptance) and that they thought it was worth looking into further. However, for the Anthropocene to be recognised as an official geological epoch and added to the geological time scale, a well-defined procedure had to be followed within the International Commission on Stratigraphy (ICS), a subsidiary organisation of the International Union of Geological Sciences (IUGS). Indeed, making a change to the geological time scale starts with the creation of a working group within the relevant sub-committee of the ICS. This working group investigates the matter, compiles the necessary evidence and formulates a proposal to the subcommittee it falls under. A qualified majority of at least 60% of the members of the working group must support the final proposal. A vote then follows within the subcommittee. If the working group's proposal again achieves a qualified majority of at least 60%, the proposal goes to the ICS. If it again achieves the same qualified majority there, it goes to the IUGS, where it still needs to be ratified by the executive committee.³² In order for the Anthropocene to possibly be recognised as an official geological epoch, a working group had to be set up within the Subcommission on Quaternary Stratigraphy (SQS), the subcommission that deals with stratigraphy in the Quaternary, the current geological period that started some 2.58 million years ago and includes the Pleistocene in addition to the Holocene.³³ This happened in 2009 when the Anthropocene Working Group (AWG) saw the light and started its activities.

The AWG presented its preliminary results and recommendations on 29 August 2016 at the 35th quadrennial congress of the IUGS (in Cape Town, South Africa).³⁴ At that time, the working group also announced the outcome of a non-binding, indicative vote on key pending questions related to the Anthropocene. The vote took place via email immediately prior to the meeting at which the answers were announced. Thirty-five members participated in the vote. The results were as follows:

1. Almost all AWG members (34/35) responded positively to the question whether the Anthropocene is a stratigraphic reality and therefore geologically substantiated (one person abstained). Humanity's recent impact on the planet is such that it is and will be visible in the geological record. Indeed, the result of our impact is sufficiently large, globally distributed, rapid and irreversible.
2. A large majority (30/35) agreed to formalise the Anthropocene as part of the geological time scale (three dissenting votes, two abstentions).
3. A majority (20.5/35)³⁵ preferred to formalise the Anthropocene as a new epoch rather than an era or a period, but also not as a new stage *within* the Holocene. This would mean that the Holocene ends with the start of the Anthropocene, but that the Quaternary does continue. The Anthropocene would thus be the third epoch within the Quaternary (after the Pleistocene and the Holocene).

4. There was more unanimity on the best time for the Anthropocene to begin: 28.5 out of 35 participants preferred +/- 1950. In doing so, the AWG deviated from Crutzen and Stoermer's original idea. They had linked the start of the Anthropocene to the beginning of the Industrial Revolution and had proposed the symbolic date of 1784, because that was the year in which Scottish engineer James Watt (1736–1819) invented the steam engine that was the basis of the Industrial Revolution.³⁶ By now putting forward 1950, the AWG opted to let the start of the Anthropocene coincide with the 'Great Acceleration', the explosive growth in human development and associated impact on the functioning of the Earth since the end of World War II.³⁷ In doing so, the AWG did not want to deny that humanity's impact on the planet goes back much further in time, but it did emphasise that that earlier impact was rather limited, regional rather than global, gradual, and mainly limited to the land.
5. There was also a clear majority (25.5/35) to define the Anthropocene using a 'golden spike' rather than numerical age (only 1.5 votes went to the latter option, 8/35 expressed uncertainty about which was the best option). A golden spike is the point in the sequence of rock layers at a well-defined and carefully chosen location that marks the beginning of a new geological epoch (and thus the base or bottom of the layer formed in that particular epoch).³⁸ That point could be, for example, the appearance of a particular fossil or a sedimentary layer with a distinctive feature. For example, the beginning of the Cambrian (541 million years ago) is marked by the appearance of fossilised burrows of a creature known as *Treptichinus pedum*, which may have looked like modern priapulid worms. The creatures themselves were not fossilised (perhaps because they had no hard parts), but the characteristic, U-shaped burrows they made are. This golden spike is located on Fortunehead, a headland near the Canadian town of Fortune (southeastern Newfoundland). The beginning of the Palaeogene (66 million years ago), in turn, is marked by a sedimentary layer with an unusually high concentration of iridium, an element that is very rare on Earth but came along with the meteorite that triggered the mass extinction at the end of the Cretaceous period and marked the end of the age of dinosaurs. This golden spike is located about five kilometres southwest of the Tunisian town of El Kef. To establish the beginning of the Anthropocene, the AWG's preference was to find a golden spike because this is the most common and accepted method of delineating segments of the geological time scale.
6. Once it came to the question of which element from the recent geological record should now be selected as a marker for the start of the Anthropocene, there was no longer a majority. The following possibilities received support: the appearance in the geological record of ash particles resulting from the use of fossil fuels (2 votes);

a change in the ratio of carbon isotopes (2 votes);³⁹ the appearance of plastic in the geological record (3 votes); the increase in CO₂ concentration in the atmosphere (3 votes); the increase in the concentration of carbon-14, the radioactive isotope of carbon, as a result of above-ground testing of nuclear weapons (4 votes); and the appearance of plutonium in the environment (10 votes). Three members suggested alternative markers: the concentration of lead in the environment; the presence of 'persistent organic pollutants' or POPs;⁴⁰ and the presence of so-called technofossils.⁴¹ Two members were unsure and six abstained.

So the main task facing the AWG in 2016 was to reach agreement on how to mark the beginning of the Anthropocene and where the golden spike should then be placed. For on this it would ultimately depend whether the working group's proposal to recognise the Anthropocene as a new geological epoch would have a chance of success within the higher bodies of the ICS and the IUGS. Indeed, not all geologists agreed with recognising the Anthropocene, and critics included some of the leading figures within the ICS and the IUGS.⁴² Critics of an official recognition of the Anthropocene as a new geological epoch criticised the AWG for its methodology. This was because it reversed the standard working method within stratigraphy: rather than starting from the geological record to look for elements that would justify a distinction between time periods, the working group tried to stratigraphically substantiate post factum a proposal of a new geological epoch that had arisen from considerations other than purely stratigraphic ones by looking for a golden spike in a predetermined time period. According to critics, this violated the discipline's ground rules as laid down in the *International Stratigraphic Guide*. Critics also found it problematic that the AWG discarded other possible starting points of the Anthropocene. Indeed, there have been very different proposals over the years about the start of the Anthropocene (as discussed at length in Chapter 8 of *Being Human in the Anthropocene*). The start of the Anthropocene has been linked to the conquest of fire, the disappearance of the megafauna⁴³ at the end of the Pleistocene, and the agricultural revolution. Those who placed the start of the Anthropocene less far in the past often suggested a concrete year. As already seen, Crutzen and Stoermer proposed 1784. In their book, Lewis and Maslin offered 1610. Another leading voice in the debate, the American-born Australian chemist Will Steffen (1947–2023), was even more precise: in 2015, he and his co-authors argued that the Anthropocene began in the New Mexico desert on Monday 16 July 1945 at 5:29 am MWT (Mountain War Time, the time zone New Mexico was then part of) with the detonation of the first atomic bomb, the so-called Trinity Test.⁴⁴ However, many geologists found it hard to accept such a recent beginning of the Anthropocene: how can we possibly conclude on the basis of soil layers only a few decades old that a new geological epoch has begun, something that usually lasts many thousands if not millions of years?⁴⁵

However, according to Catalan palaeoecologist and biologist Valentí Rull (born 1981), the AWG did not really care about such objections and simply continued working.⁴⁶ From 2018, the ICS leadership did start insisting that an official proposal should now be delivered to the SQS as a matter of urgency. However, the AWG argued that it needed more time to decide on the placement of the golden spike. The ICS reluctantly allowed this.⁴⁷ In early 2019, the AWG confirmed some of the choices made informally at the 2016 Cape Town meeting through an official vote. The results were made public on 21 May. Both the proposal to make the Anthropocene an official geological epoch that would be marked by a golden spike and the choice to start it around 1950 were approved by a large majority (29 in favour, four against, no abstentions).⁴⁸ All that remained for the working group to do was to make a decision on where to place the golden spike. At that moment, 12 sites were still in the running.⁴⁹ By early 2023, two candidates remained: Sihailongwan Lake in northeast China and Crawford Lake in Milton, Ontario (near Toronto, Canada).⁵⁰ Finally, on 11 July, the AWG announced that the choice had fallen on the Canadian lake. This happened during the fourth International Congress on Stratigraphy STRATI 2023 in Lille (France) and was made public the same evening during an online press conference as part of the Max Planck Climate Conference for a Sustainable Anthropocene (at 7 pm).⁵¹

To understand what justified this decision, we can turn to an extensive but accessible article that appeared in *The Washington Post* on 22 June 2023 (prior to the decision being announced, that is).⁵² The article says that Crawford Lake was created many thousands of years ago when a sinkhole in the limestone rocks of southern Ontario filled with water. The lake is limited in area (only 2.5 hectares), but very deep (up to 24 metres). As a result, the upper water layers (affected by sun and wind) do not mix with the underlying water layers. At the bottom, it is also too cold and dark to allow for any life. So the bottom is not stirred up. As a result, the material at the bottom of the lake is nicely arranged according to when it sank down. Moreover, due to infiltration of groundwater through the porous limestone, there is also a constant supply of oxygen, preventing certain chemical processes that could otherwise alter the sediment at the bottom. The material that sinks to the bottom is primarily the constant flow of organic material entering the lake. During summer, when the water gets sufficiently warm and the acidity is just right, calcite crystals also form in Crawford Lake. These are white in colour and when they sink to the bottom, they form a white layer there. This creates an alternation of dark and white layers, a bit like the annual rings of a tree. Just as a particular ring of a tree can be precisely linked to a particular year, each white layer in the bottom of Crawford Lake can be dated. Of course, all sorts of other material from around the lake also enters the water and then sinks to the bottom. As a result, a sample of the bottom of Crawford Lake allows researchers to look back in time and determine exactly when certain changes in the environment took place.

Most relevant in the context of the search for a golden spike for the start of the Anthropocene was the observation that a peak in the presence of radioactive plutonium occurred around the middle of the last century. This element hardly occurs naturally in the environment and so the observed spike in the bottom of Crawford Lake can only be the result of the nuclear bomb tests that took place many thousands of kilometres away during that period, whose radioactive fallout spread through the atmosphere to eventually end up in the sediment at the bottom of Crawford Lake as well. That bottom also revealed other indications of humankind's increasing impact on the Earth: ten to a hundred times more light isotopes of nitrogen and eight times more fly ash in five years, both due to increased use of fossil fuels, thinner layers of calcite due to acidification of the lake as a result of acid rain, and later, after the acid rain problem was eliminated, thicker layers of calcite because more of it was produced in the lake due to global warming. Certain bacteria disappeared locally and the amount of elm pollen also dropped drastically because around 1950 many elms in the area died of Dutch elm disease. Dutch elm disease is a deadly fungal infection spread by several species of bark beetles. The disease is thought to have reached North America by beetles that hitchhiked with a transport of wood from the Netherlands (hence the English name for the disease). This is, then, another example of humanity's impact on the planet and its ecosystems: increasing globalisation and international trade allow all kinds of species to move to places where the local ecosystem has no defence against them. Dutch elm disease, by the way, is thought to have originated in East Asia.⁵³

All these elements seemed to make the bottom of Crawford Lake an ideal golden spike for the Anthropocene. As announced on 11 July 2023, the golden spike was finally placed on the sediment layer corresponding to 1952 because of a clear spike in the presence of ²³⁹Pu and ²⁴⁰Pu, two isotopes of plutonium, in the successive sediment layers of the lake. In addition, the AWG also proposed 1 November 1952 at 7:15 am local time (31 October at 7:15 pm GMT) as the symbolic beginning of the Anthropocene: it was the moment when, on the island of Elugelab in the Enewetak atoll (part of the Marshall Islands, in the Pacific Ocean), the very first hydrogen bomb ever, named Ivy Mike, was detonated (incidentally, the island was completely wiped off the map by the blast).⁵⁴

After the choice of Crawford Lake was announced in July 2023, the ICS president unilaterally imposed a deadline on the AWG to submit the official proposal to the SQS.⁵⁵ That proposal had to be there by 29 September 2023 at the latest. Nevertheless, the AWG was able to obtain an extension and was given until 31 October. In the end, the AWG's proposal was ready on 31 October, 15 minutes before midnight, although the AWG requested extra time for additional analyses of the bottom of Crawford Lake. However, most voting members of the SQS felt that enough was enough now and deemed that the report provided was sufficient to make an informed decision. The standard procedure provided for 30 days

for discussion, but at the end of the period (late December), two members of the SQS who were also involved in the AWG, British-Polish geologist and palaeontologist Jan Zalasiewicz (born 1954) and Canadian palynologist⁵⁶ and stratigrapher Martin J. Head,⁵⁷ argued that additional time for discussion was necessary, something that most SQS members opposed, but eventually happened anyway. Eventually, the discussion ended in late January 2024 and voting began on 1 February, even though Zalasiewicz and Head had once again asked for extra time. The voting finally ended on 4 March and the outcome was an overwhelming rejection of the AWG's proposal. The proposal could convince only four of the 19 voting members of the SQS (12 voted against, three abstained).

The result of the vote was leaked the next day on the website of *The New York Times* and even made the newspaper's front page the following day.⁵⁸ It so happened that AWG members learned of the rejection of their proposal through the media even before they were officially informed about it. In fact, according to the 'Word from the Chairman' in the AWG's 13th newsletter, this had not even happened by 16 March. *The New York Times* featured two members of the SQS defending the decision, Jan A. Piotrowski (born 1959, working in Aarhus, Denmark) and Mike Walker (affiliated with the University of Wales in Lampeter, UK). Their main argument was basically that the beginning of the Anthropocene proposed by the AWG was not long enough ago and thus did injustice to the impact of humanity that preceded 1952. What of the agricultural revolution, Piotrowski wondered, and of the Industrial Revolution and of colonisation? In the article from *De Standaard* with which we began this introduction, the journalist also gauges the reaction of Leuven geologist Manuel Sintubin. Sintubin agrees with the criticism of the AWG's proposal. 'The proposal to declare the Anthropocene as the successor to the Holocene comes too soon for most colleagues,' he said. 'It is not sufficiently mature.' Possibly the choice of a golden spike in a Western country also worked against the proposal, Sintubin added. At the time the choice of Crawford Lake became known, Chinese geochemist Han Yongmin (Institute of Earth Environment, Chinese Academy of Sciences, Xi'an) already reacted dismissively: according to him, Sihailongwan Lake was 'more globally representative' because it is less influenced by factors from the immediate environment (unlike Crawford Lake, which is close to the big city of Toronto). The signal in Sihailongwan Lake, which functions in a similar way to Crawford Lake, would thus more purely represent global developments than its Canadian counterpart.⁵⁹ We may suspect, though, that there were also personal reasons behind this argument: Han was, after all, involved in the analysis of the soil of the Chinese lake.

Immediately after the leak of the outcome of the vote, Zalasiewicz and Head issued a press release requesting that the vote be declared invalid due to procedural errors and because the SQS did not study the available evidence in sufficient depth. Further, it also became known that the vote was going ahead even though in the meantime there was a

report by the IUGS Geoethics Commission on unfair and improper treatment of the AWG by higher bodies within the IUGS. In a letter to the other members of the SQS that immediately appeared on Hill Heat, a website that tracks US climate policy, Zalasiewicz reported that the IUGS executive committee at its meeting a good week before (26–28 February) had, however, disregarded most of the Geoethics Commission's recommendations. He also argued that the contents of the report should have been shared with the members of the SQS so that they could have taken them into account when voting.⁶⁰ The AWG itself also issued a press release.⁶¹ In it, it expressed its doubts about how everything had played out and it continued to stand firmly behind its own proposal.

It was all to no avail because on 20 March, the executive committee of the IUGS released a statement saying that the 17 members of the organisation's executive committee had virtually unanimously confirmed the SQS's earlier decision as valid (15 members voted in favour, one person abstained and one person could not vote due to a conflict of interest).⁶² With this, the proposal to officially recognise the Anthropocene as a new geological epoch within the Quaternary following the Holocene was definitively off the table. So, according to the official geological time scale, the Holocene simply continues. And so, as *De Standaard* put it, Crawford Lake will not become a geological hotspot and not a tourist attraction where souvenirs – such as printed coffee mugs and tea towels – would sell like hot cakes. And so the coffee mugs and other gadgets may be put back in storage or even, as mentioned in the title of the article with which we started this introduction, thrown in the dustbin.

The rejection of the AWG's proposal by the SQS and its confirmation by the IUGS executive committee naturally provoked several distinctly negative reactions. Immediately after the result of the vote was leaked in *The New York Times*, Naomi Oreskes (born 1958), a well-known American historian of science, co-author of *Merchants of Doubt* (2010) and herself a member of the AWG, reacted. She claimed the SQS had made its decision on non-scientific grounds, adding that the committee denied the light of day: rejecting the AWG's proposal could only indicate an inability or unwillingness to see what is patently obvious, that the Anthropocene has begun.⁶³ It was even more sharply articulated by Ian Angus (born 1945), Canadian ecosocialist, editor of *Climate & Capitalism* and author of *Facing the Anthropocene* (2016). He interpreted the voting down of the AWG's proposal as 'a maneuver organized by a group of conservatives and ecomodernists who have long opposed any recognition of a recent qualitative change in the Earth System'.⁶⁴ French author, journalist and artist Ewen Chardronnet (born 1971) then suggested in turn that the AWG's proposal was voted down under pressure from the nuclear lobby because the proposed golden spike put too much emphasis on the impact of all things nuclear.⁶⁵

All this naturally brings us to the question of what we can still do with the term 'Anthropocene' now that the recognition of the Anthropocene as a new geological epoch is off the table.

3. IS THE TERM 'ANTHROPOCENE' STILL USEFUL?

The most radical conclusion would be the one drawn on 15 March 2024 in *De Standaard's* weekly podcast on science and technology. There we heard the view that the term 'Anthropocene' henceforth lacks any scientific legitimacy and has the same value as terms like 'unconscious' or 'Frankenfood' ('Frankenstein food').⁶⁶ However, this conclusion was more radical than that of the IUGS itself in its statement on the decision to confirm the SQS's choice. Indeed, at the end of that statement, we can read that the IUGS expects the term 'Anthropocene' to continue to be used not only in the natural sciences, but also outside them. The term was even referred to as invaluable for describing human–environment interactions.

Some scientists saw in voting down the AWG's proposal an opportunity to move away from an overly strict interpretation of the term 'Anthropocene'. American palaeoecologist Jacquelyn L. Gill, for instance, argued that it is more meaningful to continue using the word as a broad and vague concept. She articulated this as follows in an article published on *Nature's* website on 14 March 2024:

“It's a term that belongs to everyone. To people working in philosophy and literary criticism, in the arts, in the humanities, the sciences [...] I think it's far more meaningful in the way that it is currently being used, than in any attempts that stratigraphers could have made to restrict or define it in some narrow sense. [...] It serves humanity best as a loose concept that we can use to define something that we all widely understand, which is that we live in an era where humans are the dominant force on ecological and geological processes.”⁶⁷

In the same article, British biologist and ecologist Chris D. Thomas (born 1959) (York University) called the whole discussion about when the Anthropocene did or did not actually start as basically without importance and even ridiculous: 'Many people in the humanities

who are using the phrase find the concept of the articulation of a particular year, based on a deposit in a particular lake, a ridiculous way of framing the concept of a human-altered planet.'⁶⁸ We can therefore confidently continue using the word 'Anthropocene' because it 'neatly summarizes the sense that humans are part of Earth's system and integral to its processes'. The term 'helps move us away from the notion that somehow humanity is apart from the rest of nature and natural systems' and, moreover, provides a shared ground on which diverse disciplines can engage with each other and start working together.⁶⁹

Even within geology, some still see a future for the word 'Anthropocene', no longer as a new geological epoch (which needs a clear starting point, marked with a golden spike), but as a geological event by analogy with, for example, the Great Oxidation Event (2.4 billion years ago),⁷⁰ the Cambrian Explosion (around the beginning of the Cambrian, +/- 541 million years ago)⁷¹ or the five mass extinctions that have taken place since then. This view was launched with the help of a letter from six scientists posted on *Nature's* website on 14 September 2021.⁷² One of the signatories of the letter was British geologist Philip L. Gibbard (born 1949). Gibbard is not one of the least. He is a former chairman of the SQS and was still part of the group at the time it reviewed the AWG's proposal. Meanwhile, he had also become secretary-general of the ICS. The idea of the Anthropocene as a geological event was then developed in an article in *Episodes*, the journal of the IUGS, and an abridged version appeared the following year in the *Journal of Quaternary Science*, each time with Gibbard as first author.⁷³ Five other scientists joined the author group in writing both articles, including the aforementioned Mike Walker, who was also a member of the SQS that was to review the AWG's proposal. As a matter of fact, Walker would later defend the view of the Anthropocene as a geological event in the article in *The New York Times* that would leak the SQS's decision. Incidentally, the other member of the SQS who spoke in *The New York Times*, Jan Piotrowski, also defended this view (but was not involved in the aforementioned publications). Other members of the author team whose names caught my attention were the aforementioned Gill and Maslin as well as William F. Ruddiman and Erle C. Ellis, two scientists who had already made their appearance in *Being Human in the Anthropocene*.

William F. Ruddiman (born 1943) is an American palaeoclimatologist known for the controversial *early anthropogenic hypothesis* discussed in Chapter 8 of *Being Human in the Anthropocene*. This hypothesis holds that from the moment humanity started growing crops and raising cattle, it was already putting enough CO₂ and methane into the atmosphere to avert another ice age. Indeed, given the alternation of ice ages and warmer periods during the Pleistocene, it was to be expected that after the warming at the beginning of what is now known as the Holocene, the world would gradually descend into another ice age. The fact that this did not happen was thus caused by humanity, according to Ruddiman, and would justify a very early onset of the Anthropocene.⁷⁴ Since Ruddiman launched his

hypothesis, the debate on it has not stopped and remains undecided to this day.⁷⁵ Leaving aside the question of how much extra CO₂ and methane were being put into the atmosphere by growing crops and cattle raising prior to the Industrial Revolution, more fundamental comments have also been made on Ruddiman's presuppositions. For example, Kyle Keeler, professor of environmental sciences at Lafayette College in Easton, PA (USA), objected that Ruddiman has a one-sided view of agriculture in which the agricultural revolution is seen as a fall from the paradise of hunter-gatherer existence. Agriculture is seen as humanity's domination of the environment and as by definition pernicious to the planet and the foundation for all the negative developments humanity has known since then (such as colonialism and capitalism). In this context, Keeler speaks of 'paleolithic nostalgia' and regards Ruddiman's depiction as a secularised version of the story of the Fall as it appears in the Bible. As an alternative to this depiction of agriculture as pernicious, he refers to the farming practices of the original inhabitants of the Americas and how their stories lead to the depiction of agriculture as a partnership between human and non-human nature, and as a learning process of trial and error, with no depiction of a fall and no nostalgia and no desire for the restoration of a lost state.⁷⁶

The American environmental scientist Erle C. Ellis (born 1963) then appears in *Being Human in the Anthropocene* as the author of a booklet on the Anthropocene in Oxford University Press's *Very Short Introductions* series, as a member of the AWG and as a signatory of 'An Ecomodernist Manifesto' (2015), which was written 'with the conviction that knowledge and technology, applied with wisdom, might allow for a good, or even great, Anthropocene'.⁷⁷ Since the publication of *Being Human in the Anthropocene*, Ellis had, however, resigned from the AWG, of which he had been a member since its inception in 2009. He did so on 12 July 2023, i.e. immediately after the group announced its choice of a layer in the Crawford Lake sediment as the golden spike for the start of the Anthropocene. In his resignation letter, he gave two reasons. First, he had to note with regret in his heart that the AWG had gradually developed a tunnel vision on the problem of defining the Anthropocene, leaving no room for dissent or a broader perspective on the matter. This began, according to Ellis, with the indicative vote in Cape Town in 2016, but had only got worse since then as the debate over the choice of a golden spike has been settled. Meanwhile, Ellis argued, the group existed 'only to promote one single narrow perspective'. The second reason Ellis gave for his resignation was that the way the AWG tried to define the Anthropocene actually made it an esoteric issue. Ellis did not make the comparison himself, but we might think here of the cliché of medieval theologians discussing how many angels can stand on the head of a pin. Unfortunately, Ellis argued, the discussion about the definition of the Anthropocene is not a purely esoteric issue with no real consequences. The AWG's proposal would mean radically dividing in two the history of human impact on the planet, and this is harmful because it denies 'the deeper history and the ultimate causes of Earth's

unfolding social-environmental crisis'. Is colonialism not important? Or the Industrial Revolution? The way the AWG tries to define the Anthropocene, Ellis concluded, is therefore misleading. He also expressed his hope that the idea of the Anthropocene would continue to be helpful in better understanding and shaping human interaction with the planet. Unfortunately, according to him, the AWG no longer contributed to this and even the opposite was the case. Leaving the group was then his only option.⁷⁸

Ellis reiterated his objections to the AWG's approach and the proposal to think about the Anthropocene as a geological event in a contribution to the website *The Conversation* that appeared the day *The New York Times* leaked the results of the vote within the SQS.⁷⁹ To this came a response the following week from the AWG's president and secretary (geographer Colin N. Waters [Leicester, UK] and geologist Simon D. Turner [University College London]) along with Zalasiewicz and Head. This response amounted to saying that the critics of the AWG's approach were mistaken in their criticism. For this, the four authors relied on the original meaning they believed Crutzen had given to the word 'Anthropocene':

“When Paul Crutzen first proposed the term Anthropocene in a moment of insight at a scientific meeting in 2000, it was not from realisation that humans have been altering the functioning and geological record of the Earth, or to capture all their impacts under one umbrella term. He and his colleagues were perfectly aware that humans had been doing that for millennia. That's nothing new.

Crutzen's insight was wholly different. He said that the Earth system – that is, the really fundamental things like atmospheric composition, climate, all ecosystems – had recently sharply departed from the stability that they had shown for thousands of years during the Holocene epoch, a stability which allowed human civilisation to grow and flourish.

It makes no sense, Crutzen said, to use the Holocene for present time. He conceived the Anthropocene as the time when human impacts intensified, suddenly, dramatically, enough to push the Earth into a new state.⁸⁰

This response makes it clear that depicting the Anthropocene as an epoch that began only recently *does not* preclude recognition that humanity's impact on the planet goes back many thousands of years. In a later article, published in *Nature* on 29 August 2024, Zalasiewicz, Waters, Turner and Head, along with US historian Julia Adeney Thomas,

noted that the beginning of a geological epoch is *not* usually placed at the moment when a particular transition in the Earth's system begins, but *rather* when its effects become sufficiently visible and measurable.⁸¹ Industrialisation, colonisation, the agricultural revolution and even the control of fire: they all contributed to the Anthropocene, of course, but that does not mean they are all part of it. Rather, they belong to what we can call the prelude to the Anthropocene. In *Being Human in the Anthropocene*, I suggested in this context the distinction between the 'Palaeoanthropocene' and the Anthropocene proper. The term 'Palaeoanthropocene' was introduced in 2013 in an article of which Crutzen was also one of the co-authors.⁸² That article described the Palaeoanthropocene as 'the period between the first, barely recognizable, anthropogenic environmental changes and the industrial revolution when anthropogenically induced changes of climate, land use and biodiversity began to increase very rapidly'.⁸³ This description obviously (still) assumed that the actual Anthropocene began with the Industrial Revolution, but it can obviously be easily adapted to an Anthropocene starting in the mid-twentieth century. Thus, according to the AWG's view, the Industrial Revolution was also part of the Palaeoanthropocene. Of course, the way the authors described the Palaeoanthropocene immediately raised the question of when the Palaeoanthropocene had actually started and, as I noted in *Being Human in the Anthropocene*, it is difficult to determine when humanity's impact on its environment was sufficiently large for the Palaeoanthropocene to begin. Ultimately, as I also noted in *Being Human in the Anthropocene*, non-human animals also try to bend the environment to their needs and thus influence it (think, for example, of earthworms churning up soil or beavers building a dam). I then put forward the control of fire as a plausible starting point of the Palaeoanthropocene because it played an important role not only in the increase of the impact of humans on their environment, but also in the development of humankind in general (being able to cook food undoubtedly played a role in the growth of our brains since we can get more energy from cooked food). With that, the Palaeoanthropocene goes back deep into the Pleistocene, as the control of fire is at least 400,000 years and maybe even two million years old.⁸⁴

The word 'Palaeoanthropocene' has been used sporadically in scientific publications since it was proposed, but did not become widely used. In 2022, in an article in *Earth-Science Reviews*, the AWG proposed an alternative way of distinguishing between the Anthropocene proper and a preceding period when human impact had not yet pushed the Earth out of its Holocene state. For this, they joined the proposal to understand the Anthropocene as a geological event. The AWG itself obviously wants to reserve the term 'Anthropocene' for the geological epoch in which the Earth is out of its Holocene state. The human impact preceding it is then referred to in the article as the 'Anthropogenic Modification Episode' (AME).⁸⁵ The term 'episode' is deliberately chosen here and refers to a particular type of geological happening, one that extends over a very long time span and whose impact is felt

globally and for a longer period.⁸⁶ In contrast, the authors of the article reserve the term 'event' for things that last (relatively, in geological terms) for a short time, although that does not preclude a geological event from changing the course of the Earth's system. An example is the meteorite that sealed the end of the dinosaurs. Moreover, it seems appropriate not to use the term 'Anthropocene' to denote a geological episode or event: indeed, the suffix -cene inevitably evokes the idea of a geological epoch.⁸⁷ What it should be, then, is not so clear. 'Anthropogenic Modification Episode' is a good suggestion, but it is quite a mouthful and so may not be so easily assimilated by a wide audience.⁸⁸

According to Australian philosopher Clive Hamilton (born 1953), the main reason why most scientists have a hard time accepting the Anthropocene as a geological epoch is the fact that they have not (yet) internalised the revolution brought about by the emergence of Earth System Science. As a result, the term 'Anthropocene' is fitted into the old disciplines of science with which these scientists are familiar and 'with which they are comfortable'.⁸⁹ However, according to Hamilton, the depiction of the Anthropocene only makes sense and can only be correctly understood within the framework of Earth System Science. The foundation of Earth System Science is the discovery of the Earth as a whole, as a totality, as 'a complex, dynamic, ever-evolving totality comprised of myriad interlocking processes'.⁹⁰ Speaking of the Earth as a system also means that the Earth is more than 'an elaborate mechanism subject only to mathematical laws of cause and effect'. Instead, it is 'a self-organizing dynamic system characterized by *emergent properties*'. Emergence means that the system possesses properties that arise exclusively in the interaction between the components of the system: they 'cannot be found in any individual element of it and evade all cause-and-effect explanations'.⁹¹ It is the appearance of the Earth as a system that made possible the specific interpretation the AWG gave to the Anthropocene. Hamilton therefore puts it very clearly. The term 'Anthropocene' *does not* refer to the steady increase in human impact on the landscape or the increasing adaptation of ecosystems by humans.⁹² 'The Anthropocene does not begin,' Hamilton further explains, 'when humans first play "a significant role in shaping the earth's ecosystems"; it begins when humans first play a significant role in shaping the *Earth*, that is, the Earth that evolves as a totality [...].'⁹³ The term 'Anthropocene' refers to the fact that humanity has recently begun to influence the Earth System as a whole. In this way, humanity's impact has not only increased further, but has changed in nature substantially.⁹⁴

For Hamilton, then, it is justified to talk about the Anthropocene because humanity has taken the Earth System beyond the variability that characterised it during the Holocene. The Earth System has now changed irrevocably.⁹⁵ It is now in a situation it has never been in since the dawn of human civilisation. The Holocene as we have known it is also never coming back. Even if our impact were to cease immediately and completely, its effects would still be felt in the Earth System for many thousands of years and some things will never

recover.⁹⁶ The CO₂ molecules we emit now could remain in the atmosphere for thousands or even tens of thousands of years, and animal species that have died out will never return. Although over a long period of time the Earth System will eventually reach a new state of equilibrium (an equilibrium that is always precarious, of course, because non-human factors can also disrupt the system), it will no longer be the state in which humanity flourished.⁹⁷ It is also important to bear in mind that change in complex systems is not always gradual. Specific to a complex system like the Earth is that an accumulation of small changes can lead to a sudden, drastic change. This kind of transition is known as a ‘phase change’ and it involves the system changing from one state to another (such as the transitions between ice ages and warmer periods during the Pleistocene, which often occurred abruptly). As the Earth System moves further away from the boundaries within which it was during the Holocene, the likelihood increases of certain thresholds being exceeded and the system reaching a tipping point that causes it to transition to a new state.⁹⁸

In fact, according to Hamilton, the start of the Anthropocene marks ‘a break in Earth history of the greatest profundity’.⁹⁹ Indeed, the start of the Anthropocene splits the Earth’s history into two halves.¹⁰⁰ For the first time in our planet’s long history, the course of the Earth System is no longer determined solely by unconscious and unintentional physical factors (such as weathering, volcanic eruptions, meteorite impacts, plate tectonics and changes in how the sun’s rays fall on the Earth). Henceforth, there is an influence on the Earth System that is radically different from all previous ones, namely a non-physical factor (obviously with physical consequences): ‘the element of volition’. Indeed, humanity’s impact on the Earth System ‘does not just happen’. As Hamilton argues, ‘[global anthropogenic impacts] are the consequences, intended or otherwise, of *decisions* taken by human minds’. Hamilton therefore suggests that in relation to humanity, it is therefore important not to speak of ‘a geological force’ but of ‘a *geological power*’. The major distinction between humanity and previously mentioned factors is that humanity can also decide not to exert its influence. A power can abstain, a force cannot.¹⁰¹

What is important here is that human power *does not* work alongside non-human forces, but through them, by altering their operation. This also implies that the (modern) distinction between human history (as made by conscious beings with intentions) and the history of the planet (which unconsciously and indifferently pursues its path) is obsolete. Henceforth, the two have become intimately intertwined. They blend into each other.¹⁰² The Earth is therefore no longer merely a stage and the backdrop for human history, but it becomes an actor who explicitly and increasingly so claims a role in the play. At the same time, humanity is the one who woke up this actor and ensured that it now comes to interfere with what is happening on stage. From now on, the Earth steers our history and our history determines the further course of the history of the Earth System. The future of humanity and the future of the Earth System are therefore henceforth intimately intertwined. The

fates of both are linked, fused even. And for Hamilton, it is crystal clear: the core message of Anthropocene science is that humanity is no longer in control of its own destiny.¹⁰³ Yes, we have great power, but we are faced with an adversary that offers defiance. Moreover, this is an adversary that risks becoming more contrarian, more irritated and more uncontrollable the more we disrupt it. So our power is far from absolute.¹⁰⁴

Hamilton’s arguments make it clear that by failing to recognise the Anthropocene as a new geological epoch, an important opportunity was missed to make clear how profound and far-reaching humanity’s impact on the Earth System is, and how great the risks of destabilisation and disruption this poses are. Actually, we can compare humanity to a ship sailing blindly into uncharted territory. It is hard to overestimate the scale of the rupture referred to by the term ‘Anthropocene’. The world as we know it, including our conceptions of ourselves, society, the world and any ultimate reality: it was all created during the Holocene. Now that we have put the Holocene behind us (not officially, but in the facts as established by Earth System Science), nothing can really be taken for granted. Everything is possibly in question. Everything may have to be reconsidered.¹⁰⁵ I would therefore like to continue to use the term ‘Anthropocene’ as it was fleshed out by the AWG.

If the Anthropocene leads to (possibly) everything changing and nothing remaining the same, it cannot fail to affect our way of being in the world as well. It is therefore abundantly clear that spirituality cannot avoid the new reality indicated by the term ‘Anthropocene’, if we want to at least take Sheldrake’s lesson seriously (see earlier) and not let spirituality degenerate into a form of world flight and denial. So we will have to learn to relate to the Earth System, that new object that is the result of countless data collected by satellites and other high-tech measuring instruments and processed by powerful computers.¹⁰⁶ How can such an entity become the object of personal thought, feeling and action? We are also challenged to relate to humanity as a collective, as a geological power, as the *anthropos* from the term ‘Anthropocene’. As individuals, we each make up only an unsightly and insignificant particle of it. Taken individually, our impact on the Earth System is nil and completely negligible, both for better and for worse. But for the collective we are part of, it is different. That can match volcanoes, meteorite impacts and plate tectonics in terms of impact on the Earth System. There is therefore a great tension between individual powerlessness (not just with regard to the Earth System, but also with regard to the collective) and the power of the collective.

Humanity’s great collective power as *anthropos* seems to suggest that we are in urgent need of what we can describe, with a term used by Hamilton, as ‘species thinking’.¹⁰⁷ We need to start thinking, feeling and acting as one. At least according to space philosopher Frank White, our survival depends on this. He articulated this as follows in the documentary titled *Overview* (2012): ‘We have to start acting as one species with one destiny; we are not going to survive if we don’t do that.’¹⁰⁸ Can we not read in this statement a plea for spirituality

as we fleshed it out earlier in this introduction? Is this not a call for connectedness and self-transcendence, transcending short-termism and self-interest? If so, then the challenge is how we can/should shape spirituality now that we have entered the Anthropocene and how we can grow in the connectedness and self-transcendence we seem to need to survive the Anthropocene. What resources are available to us for this?

4. THE CHALLENGE OF THE CHANGED ZEITGEIST

At the end of this introduction, I feel compelled to dwell on a personal struggle that has complicated the writing of this book. It is relevant to talk about this explicitly because it is related to the project announced at the end of the previous paragraph, promoting species thinking through the development of a spirituality for the Anthropocene. To introduce the aforementioned struggle, it can do no harm to point out that *Being Human in the Anthropocene* (like this book, which is its successor) was written with the students in mind who take an RZL course with me, although of course I also hoped that the book could appeal to a wide audience of other interested readers as well. From the reactions I have received since the publication of *Being Human in the Anthropocene*, this seems to be the case, although an academic book like *Being Human in the Anthropocene* cannot be expected to become a bestseller. RZL is organised university-wide at KU Leuven. It is one of the ways the university tries to contribute to the broad, general-human education of its students in ethical, cultural and social matters.¹⁰⁹ In the 'Foreword' of *Being Human in the Anthropocene*, the intent of the book was therefore expressed very broadly. The book wanted to be an invitation to ponder. I wanted to open the eyes of my readers and provide them with thinking frameworks and reading keys to reflect on themselves, the world and the big questions of life (as listed earlier in this introduction). With *Being Human in the Anthropocene*, I wanted to offer my readers food for thought and let them discover how societal issues and challenges are linked to a variety of religious and philosophical views and presuppositions. In my 'Foreword', I also expressed the expectation that some issues might thereby become less unambiguous and simple, but I hoped that this would enable my readers to gain a more complex and nuanced understanding of themselves, their fellow human beings and society. *Being human in the Anthropocene* wanted to make its readers more aware of their own life stance through a confrontation with the different ideas and

visions discussed in the book and wanted to challenge them in their own philosophical presuppositions so that they could explicitly choose for or against them.

During the period when *Being Human in the Anthropocene* was written, I taught RZL mainly to students from the Faculty of Science and the Faculty of Engineering Technology. The concept of RZL implies that the teacher seeks to connect with the interests, background and specific training of the students being taught. Thus, in *Being Human in the Anthropocene*, much attention was paid to science and technology in relation to the big questions of life (as was also made clear from the subtitle: *Religion and Spirituality in a World of Science and Technology*). For me, however, this was not a matter of mere strategy or pragmatism. On the contrary, I was, and I am, in fact deeply convinced that issues of religion, meaning-giving and life stances must today inevitably and necessarily be discussed in confrontation and conversation with natural science and technology. This also applies to those who do not study at a faculty belonging to the university's Science, Engineering and Technology Group. Indeed, even then, science and technology fundamentally determine and influence the life you lead, and consequently cannot be avoided when reflecting about the big questions of life.

In *Being Human in the Anthropocene*, climate change formed the common thread throughout the book and the framework within which all reflections unfolded. The concern for (the consequences of) climate change permeated the entire text. For instance, the idea of the Anthropocene was introduced at the end of a very long chapter in which various aspects of climate change were discussed in detail. Behind the choice of this focus, the influence of current events can be suspected. The texts that eventually ended up in *Being Human in the Anthropocene* were penned in the period from August 2017 to January 2020 (not in the order in which they were eventually published). This was a period when we in Flanders faced a number of consecutive hot and dry summers, something I interpreted as finger-pointing to the impact of climate change in Flanders. On 25 July 2019, for instance, temperatures exceeded 40°C in many places in Belgium, something that had not happened since measurements by the Royal Meteorological Institute of Belgium began on 1 January 1833. In the period from July 2016 to January 2020 (a period of 43 months), there were as many as 31 months with less precipitation than normal. There were also some very wet months, but these did not compensate for the dry months. By the end of January 2020, by the time *Being Human in the Anthropocene* was at the printers, the cumulative precipitation deficit had already reached 546 litres per square metre (based on the normal figures for the 1981-2010 period).

The period in which *Being Human in the Anthropocene* was written was also the period in which the school strike for climate arose and grew into a global phenomenon. As is well known, Sweden's Greta Thunberg started this on 20 August 2018. Thunberg, 15 at the time, was badly affected by the past summer's heat waves and wild fires in Sweden and decided to protest outside the Swedish parliament every day during school hours until the elections on 9 September to demand a bolder climate policy. After the elections, she decided to continue

staying away from school every Friday for the climate. In this way, she inspired hundreds of thousands of young people all over the world, including in Belgium. In Belgium, the first action took place on Thursday 10 January 2019 under the name ‘Youth for Climate’. It took place at the initiative of Kyra Gantois (born 1999) and Anuna De Wever Van Der Heyden (born 2001), who knew each other from school in Mortsel. However, it was De Wever Van Der Heyden who would become the Belgian face of the movement. Gantois always stood in her shadow and finally left the core group of Youth for Climate at the end of August 2019. Things had not been going well between her and De Wever Van Der Heyden for some time and that had a negative impact on the group, which treated her – in Gantois’s own words – ‘like a piece of dirt’.¹¹⁰

With its focus on climate change, *Being Human in the Anthropocene* was clearly in tune with current events at the time and, I suspected, with the lifeworld of the students taking RZL with me. I assumed that the concern about climate change offered a widely shared basis for talking about the big questions of life, about spirituality and about religion, meaning and philosophy of life, and thus realising the general objectives of my RZL courses (as just described). This too, by the way, was not merely a matter of strategy or pragmatism. From a very young age, I was interested in and concerned about the environment. I remember that as early as fourth grade I gave a talk on the consequences of ‘the greenhouse effect’ (as it was then called). At that time, in the 1989–1990 school year, climate change was only just becoming known to the general public. I was also a member successively of Natuur2000 and JNM (Youth Association for Nature and the Environment), but dropped out of the latter after a camp that was a total disaster (my 12-year-old self at camp together with guys aged up to 30 was not a good idea). Later, I became an active member of what was then called Agalev (today’s Groen), Flanders’ green party, and I got involved at both national and local levels. At one point, there was even talk that I might head the list of candidates in West Flanders for the parliamentary elections. That did not happen because the national party leadership wanted to pull the stunt that all persons heading the lists had to be women. And in retrospect, that was a good thing for me. Because that was in 2003, the year in which Agalev, after its first participation in the government, in the Verhofstadt I government, was completely swept off the map and failed to win even those seats that had been considered as absolutely certain. This could have left me empty-handed, because if I had had to throw myself into the election campaign, I probably would have had to put my studies on hold and might not have been able to start a PhD in theology in October 2003. I have not been politically active for many years (although I was once again on the green list for the municipal elections in October 2024, but that was purely to help the party get a complete list). The combination with an academic career proved difficult, but I also had to admit that I am not cut out for politics. I am not very good at promoting and selling myself, don’t have a big mouth and am certainly not a campaign animal. I do not like discussions where the

only intention is to score points and outdo the other, and perhaps I am also too inclined to nuance in an age that relies on one-liners and tweets.

When I received notification from KU Leuven in mid-January 2023 that my application for a sabbatical from February to September 2024 had been approved, which would mean that I would have no teaching for the entire second semester and would thus not have to teach RZL for an entire year (as all my RZL courses are in the second semester), I decided to use the available time to rework *Being Human in the Anthropocene*. Initially, I only planned to bring the content and structure of the Dutch book in line with the English version that had been published in February 2022 under the title *Living in the Age of Humans* and intended for the students of Campus Group T who are taking the English-language course ‘Religions’ with me. That would then give me enough time to work on the actual project I had planned for my sabbatical (working on a course book for courses on Catechetics that I teach at the Faculty of Theology and Religious Studies). Almost immediately after my sabbatical was approved, however, I was given the opportunity to take over two RZL courses (one in Dutch and one in English) at the Faculty of Economics & Business (Brussels Campus). This caused me to start looking into the relationship between religion and spirituality on the one hand and economics on the other, and it made me decide that more was needed than an adaptation of my Dutch-language course book to the English variant, but that actually a completely new or at least thoroughly reworked book was needed.

Since I made that decision, however, I have struggled and still struggle with the question of to what extent the focus of *Being Human in the Anthropocene* and *Living in the Age of Humans* – climate change – was still appropriate. Of course, it is not that I now suddenly consider climate change to be no longer important. On the contrary. I hope my choice to stick to the term ‘Anthropocene’ as fleshed out by the AWG and to align with Clive Hamilton’s vision makes this sufficiently clear. Yet since the publication of *Being Human in the Anthropocene*, much seems to have changed in society and in the spirit of the times. An important indication of this is that climate protest has since ceased to be as visible and powerful as it was in spring 2019. Youth for Climate, for instance, seems to have died out. The last action announced on their website is still the big climate march on Sunday 23 October 2022, two years ago.¹¹¹ Perhaps the movement did not survive the departure of De Wever Van Der Heyden (announced at the end of August 2022).¹¹² In itself, of course, it should not be surprising that a movement like Youth for Climate comes to a standstill after a while, because staying away from school and going to march every week is a form of action that is difficult to sustain, especially if concrete results are not forthcoming. However, even the big climate marches on Sundays no longer achieve the turnout they once did. For the march two years ago that remains the most recent announcement on the Youth for Climate website, some 25,000–30,000 participants eventually made their way to Brussels.¹¹³ This was significantly less than previous editions. On Sunday 2 December 2018 (before the start of Youth for Climate), some 65,000 people came to Brussels, according

to the police. This made it the largest ever climate march in Belgium up to that time. In fact, the organisers counted some 70,000–75,000 attendees, uttering the words ‘overwhelming’ and ‘historic’.¹¹⁴ Just under two months later, the record was already being set even higher: on Sunday 27 January 2019 (while Youth for Climate was in full expansion), at least 70,000 people marched through the streets of Brussels to demand bold climate policies. So many people came to the march that the Belgian railways could not handle the influx.¹¹⁵ The first major climate march since the outbreak of the coronavirus pandemic, with the slogan ‘Back to the Climate’, took place on Sunday 10 October 2021. Opinions were sharply divided on the number of attendees: the police counted about 25,000, while the organisers saw 50,000 or even 70,000.¹¹⁶ The 3 December 2023 climate march attracted around 20,000–25,000 participants.¹¹⁷

Meanwhile, the political situation has also changed profoundly. The European elections from 23 to 26 May 2019 resulted in a green wave (especially in Germany, France and Ireland).¹¹⁸ That resulted in 75 Green MEPs out of a total of 751, the highest number ever (after Brexit, it was 68 out of 701). 2019 also saw the launch of the so-called European Green Deal, an ambitious plan to make the European Union climate-neutral by 2050. Both these things can be credited to the young people taking it to the streets for the climate. At least according to Dutch politician Frans Timmermans (born 1961), at the time a member of the European Commission and pacesetter for the Green Deal, it would not have come about without Greta Thunberg and ‘Fridays For Future’ (as the movement she inspired was usually referred to internationally).¹¹⁹ Five years later, the picture looks completely different. As of the European elections in May 2024, there are 53 Green MEPs left (out of a total of 720) and the parties that oppose what they sometimes call ‘climate madness’ are now taking many more seats in the European Parliament. Ambitious climate policies are increasingly under pressure and being watered down. Just think in this context of how the Nature Restoration Law, a crucial part of the Green Deal aimed at halting and reversing the decline of biodiversity in Europe, was hanging by a thread for a long time and how a watered-down version of the original proposal was only saved because Austrian Environment Minister Leonore Gewessler voted in favour of it, even though there was no consensus for it within her government and it was not even clear whether she was legally allowed to do so.¹²⁰

So, in the light of these developments, it remains to be seen whether climate change can still provide a widely shared basis for talking about the big questions of life, about spirituality and about religion, meaning-giving and philosophy of life, and thus realising the overall objectives of my RZL courses. In fact, it even begs the question to what extent this was the case in 2019. How representative was Youth for Climate and how broad-based was the movement’s protest? And to what extent was its success a product of the media attention the phenomenon could count on? A study of the profile of the Belgian climate truant in comparison with the prototypical participant in demonstrations and the wider population revealed two things.¹²¹ On the one hand, climate truants were atypical because they were younger

than the average demonstrator (which was obviously to be expected), had less experience of protesting and were less tied to existing organisations. However, this was mainly the case at the beginning of the protest and diminished as the weeks went by. On the other hand, Belgian climate truants had a higher level of education, were interested in politics and politically articulate (all things they had in common with the prototypical participant in protests and demonstrations). They also situated themselves distinctly left on the political spectrum and had a clear preference for one political tendency: between 71% and 80% of Belgian climate truants sympathised with the green parties (Groen, Ecolo). The authors add, however, that it is not clear in which direction the causality ran: did young people participate in Youth for Climate because they already sympathised with the green parties or did they acquire this political party preference thanks to their participation in Youth for Climate’s actions? Or did those with sympathy for green parties simply keep up the protest better? Either way, it is clear that the climate truants were not at all a representative sample of young people, let alone of the wider population. For instance, less educated young people, those on the right side of the political spectrum and those with no interest in politics were clearly underrepresented.

In Belgium, on 26 May 2019, there were not only European but also federal and regional elections. The result of these elections should actually have made me think more about whether my focus on climate change in *Being Human in the Anthropocene* was a good choice. Because notwithstanding five months of actions by Youth for Climate, a green wave failed to materialise in Flanders. Groen did improve compared to the previous federal and regional elections, but only slightly: for the federal parliament (Dutch-speaking electoral college) by 1.2% (from 8.5% to 9.7%, from six to eight seats) and for the Flemish Parliament by 1.4% (from 8.7% to 10.1%, from 10 to 14 seats).¹²² This was a lot less than what the polls had foretold in the run-up to the elections. For instance, 100 days before the elections, Groen was even estimated at 15.6%.¹²³ Compared to the local elections seven months earlier, there was even a marked decline (see table):

	2018 (provinces) ¹²⁴	2019 (federal)	2019 (Flemish)
Antwerp	14.40%	11.00%	11.18%
Limburg	8.50%	6.88%	6.71%
East Flanders	14.00%	10.32%	10.52%
Flemish Brabant	15.10%	11.83%	12.22%
West Flanders	12.20%	7.92%	7.08%

Evolution election results

Rather than a green Sunday, 26 May 2019 was a black Sunday in Flanders: the radical-right party Vlaams Belang, decimated four years before, experienced a spectacular comeback: from 5.9% (three seats) to 19.1% (18 seats) in the Federal Chamber and from 5.9% (six seats) to 18.5% (23 seats) in the Flemish Parliament.

In retrospect, while writing *Being Human in the Anthropocene*, perhaps I should have given more weight to the report that appeared in the *dS Weekblad* on the day before the election under the telling headline ‘Did we work so hard for that? To surrender all our comforts again?’¹²⁵ In this reportage, journalist Ine Renson reports on a three-week tour of small towns and cities in *la Flandre profonde*, Flanders far from the big cities, to find out what keeps people awake at night. On climate, climate policy and climate truants, she reported:

“The distrust of climate policy runs deep. Talk to people at the market in Aarschot, in a hospital restaurant in Eeklo or in a pub in Lef-finge, and the arguments return. What is it now: diesel or petrol? Will the electricity meters of people with solar panels continue to run backwards in the future? Will there be enough electricity for all those electric cars? And who will be able to pay for such a car? ‘My diesel car will soon no longer be allowed into town,’ says Geert De Mey (55), an inhabitant of the ‘Meetjesland’. ‘Unless I pay. Then it is not polluting. On the one hand they give premiums, on the other they knock the money out of your pockets.’ For many it is clear: climate policy is a way to fill the financial pits.

The farmer, says [Isabelle] Blomme [47; business manager of an artificial insemination centre], has been getting the blame for decades. Hounded by environmental and animal welfare rules, and bogged down in the race to bigger stables and more animals. ‘He produces at rock-bottom prices for the export market. Goes into debt. Until he gives up the fight and his land or his farm is taken over by agribusiness.’

Now the climate truants are coming on top of that. With their slogans about cow farts. She grimaces in horror. ‘So is it better that we import soybeans from Brazil? What’s wrong with a good piece of meat? Nothing, apparently. I can see those guys getting off the train with their pamphlets, straight to McDonald’s.’

The anger among farmers is echoed in Flemish kitchens. Many are not eager to swap their piece of meat for veggie burgers. The culture war has partly shifted to the climate debate. This affects the Fleming in who he is, in how he lives. Can he still drive his car? Can he still light his fireplace? Are those green boys and girls allowed to dictate how he should live?

[According to Lander Vandroemme (39), an employee at the Mes-sines Welfare Department] ‘The green wave largely passes over people here. The first thing an 18-year-old wants is a car. Everything here is far away, you can hardly do without it. People don’t understand why the national media talk about the climate all the time. What lingers is the feeling: “It will cost money again. We won’t be allowed to do anything anymore.” Concentrate housing in the centre of villages? All good, but I have many friends who bought a farmhouse in the green areas. Those have fulfilled their dream. They just want to carry on as they are doing.’

The realisation that things will have to change is gnawing at many Flemings. Anuna De Wever and co. are the scapegoat. From the sea dyke in Middelkerke to deep in Limburg: it is striking how often adults denounce the climate truants, ‘that bunch of naive kids who don’t have to pay bills, have never seen a cow up close and are being chauffeured around by taxi mum’.

No doubt there were individuals among my students in past years who shared these sentiments. That could hardly have been otherwise. The opposite seems very unlikely to me. Looking back, I wonder why these students did not speak up. It makes one think about power relations in a lecture hall, even when explicitly striving for a context where there is room for dissent. Since 2019, the above sentiments may only have grown stronger.

On top of this, there also seems to be an increasing gender divide with girls and young women becoming more left-wing/progressive and boys and young men more right-wing/conservative. We can see this in an article published on 13 March 2024 in the British opinion magazine *The Economist* that reported on a survey of young adults between 18 and 29 years old based on data from 20 wealthy countries. The researchers found that about two decades back, there was hardly any difference between young men and young women in terms of the extent to which they were more likely to be conservative or more likely to

be progressive. But since then, young men have become more conservative and young women quite a bit more progressive, so that by 2020 there was a gap of about 0.75 points between the two (on a scale of 1 to 10).¹²⁶ A study published in the Belgian political magazine *SamPol* in the run-up to the 2024 elections found that there is also a political gender gap among Flemish GenZers (GenZ is the generation born between 1997 and 2012).¹²⁷ Although Flemish women are generally more inclined to vote for Groen and Flemish men are generally more inclined to vote for N-VA and Vlaams Belang, among GenZs we see a pronounced polarisation around the radical-right party: 31.8% of boys of this generation say they are highly likely to vote for Vlaams Belang compared to only 8.9% of GenZ girls. Conversely, the party arouses aversion in 75.0% of GenZ girls compared to only 35.1% of boys. Related to this is the observation in the same article that girls are more concerned about climate than boys. It should therefore perhaps come as no surprise that it was girls who took the lead in Youth for Climate, something I already mentioned in *Being Human in the Anthropocene*. There I also referred to the analysis made twice in *De Standaard* that the most aggressive reactions against the school strike for climate came from men because the independent women who were the face of the movement questioned and threatened the masculinity of a significant proportion of older and less old men, as they saw it.¹²⁸ Conversely, concern for climate could therefore be perceived as ‘feminine’ and consequently ‘unmanly’, as something for girls and not boys.

Therefore, in developing my new course book, I finally decided not to follow Frank White in his advocacy of species thinking without further ado and to refrain from immediately elaborating on this species thinking without first raising a number of concerns. (1) Is species thinking really necessary to survive the Anthropocene or are alternatives possible? (2) If not: is species thinking even possible? Can the sentiments from the quotes above be countered by spirituality, or do we need to consider the conditions of possibility of the way of being in the world that we refer to as ‘spirituality’? (3) And suppose species thinking is both necessary and possible, is it desirable? Or is the remedy even worse than the disease? To address the first question, I want to start from what I will call ‘progress thinking’. We will do so in Chapter 2. First, however, we need to talk about something else, namely ‘religion’. This is not primarily because we cannot avoid religion in a book intended for courses on religion, meaning-giving and philosophy of life, but mainly because it was traditionally religions that nurtured people’s spirituality. Religions have helped generations of people shape their connection with themselves, with their fellow human beings, with the wider cosmos and a higher reality. They have also stimulated countless generations of people to self-transcendence and have proved to be a rich source of meaning-finding. As a matter of fact, they still are for millions of people worldwide. Traditionally, then, spirituality is something that largely takes place within the framework of one religion or another. But what exactly is religion? We will talk about that in the first chapter of this book.

Notes

1. See https://www.standaard.be/cnt/dmf20240307_96342235.
2. Under the heading of ‘global change’ are world-encompassing changes in the functioning of planet Earth (see https://en.wikipedia.org/wiki/Global_change) (both accessed 2 October 2018). IGBP (www.igbp.net) ran from 1987 to 2015 (see https://en.wikipedia.org/wiki/International_Geosphere-Biosphere_Programme). Since 2015, the work of IGBP has been continued by Future Earth (see <http://www.futureearth.org>).
3. The Holocene is the geological epoch that began about 11,700 years ago. It is characterised by an exceptionally stable and favourable climate. It is during the Holocene that the agricultural revolution took place and all of humankind’s civilisations flourished.
4. See Lewis & Maslin 2018, 20–21.
5. See *Dikke Van Dale*, accessed online 2 October 2018.
6. See Grinevald 2007, 243, where the author quotes from an email from Stoermer to him: ‘I began using the term “Anthropocene” in the 1980s but never formalized it.’ Grinevald adds that the term could also be found in Revkin 1992 (Grinevald 2007, 243, see also 217). Revkin, however, refers to ‘the Anthropocene’: ‘Perhaps earth scientists of the future will name this new post-Holocene period for its causative element—for us. We are entering an age that might someday be referred to as, say, the Anthrocene. After all, it is a geological age of our own making’ (Revkin 1992, 55).
7. Crutzen & Stoermer 2000.
8. For some examples of the latter, see https://en.wikipedia.org/wiki/Anthropocene#Popular_culture (accessed 14 October 2024).
9. See Lewis & Maslin 2018, 4–5.
10. Lewis & Maslin 2018, 5.
11. See Sheldrake 2012, 86.
12. See Sheldrake 2012, 88.
13. Weathers, McCarthy, Coffey 2015.
14. Weathers, McCarthy, Coffey 2015, 93.
15. Weathers, McCarthy, Coffey 2015, 83 & 93.
16. Weathers, McCarthy, Coffey 2015, 83.
17. Weathers, McCarthy, Coffey 2015, 91.
18. Weathers, McCarthy, Coffey 2015, 93.
19. See Lephed 2015, 567.
20. See Hay 2006, 21–22: ‘a fundamental insight. Each of us has the potential to be much more deeply aware both of ourselves and of our intimate relationship with everything that is not ourselves.’
21. Cf. the title of Chapter 2 of Hay 2006. See also p. 33: ‘Children emerge from infancy with a simplicity that is richly open to experience, only to close off their awareness as they become street-wise. To be open is to be vulnerable. Its contrary is “to know the score”, to know how to look after yourself in a hostile environment.’
22. See also Nye 2009, 7–9.
23. See Nye 2009, 8.
24. See Weathers, McCarthy, Coffey 2015, 93.
25. Weathers, McCarthy, Coffey 2015, 92.
26. Accessed online 28 October 2019.
27. See <https://nl.wikipedia.org/wiki/Levensbeschouwing> (accessed 28 October 2019). The equivalent page in English is https://en.wikipedia.org/wiki/Life_stance (accessed 21 December 2020).
28. Accessed online 28 October 2019.
29. See Sheldrake 2012, 100–101: ‘Spirituality cannot be innocent of generally accepted developments in human knowledge. Nor can approaches to spirituality ignore the ways in which previously overconfident views of human progress have been undermined by recent painful historical events. To put it simply, we have to take into account the new worlds opened up by cosmology, evolutionary theory, psychology, and the social and political sciences. Equally, spirituality can never be the same again after the horrors of the Holocaust and Hiroshima.’

30. Stratigraphy ‘is a discipline within the earth sciences concerned with the study of the sequence of successive rock layers (stratification), with the aim of dating and describing earth layers’ (see <https://nl.wikipedia.org/wiki/Stratigrafie>; accessed 15 October 2024).

31. See https://en.wikipedia.org/wiki/Anthropocene#Anthropocene_Working_Group (accessed 27 October 2024).

32. See Lewis & Maslin 2018, 283. On the 60% qualified majority requirement, see <http://quaternary.stratigraphy.org/working-groups/anthropocene/> (accessed 15 October 2024).

33. The Pleistocene is thus the epoch that preceded the Holocene. It is characterised by a succession of ice ages and periods with a more temperate climate. It is the epoch in which the genus *Homo* originated (see <https://nl.wikipedia.org/wiki/Pleistocene>; accessed 15 October 2024).

34. For this and the next six paragraphs, see Zalasiewicz *et al.* 2017, 58–59.

35. Voting participants could split their vote across multiple options if they felt that certain options were still equally plausible (see Zalasiewicz *et al.* 2017, 58).

36. It is not immediately clear where Crutzen and Stoermer got the year 1784 from. In fact, Watts developed his steam engine in the period between 1763 and 1775 (see https://en.wikipedia.org/wiki/Watt_steam_engine; accessed 15 October 2024). By the way, it should be noted that Watts’s steam engine did not immediately enjoy wide distribution. As mentioned by Lewis and Maslin, the Industrial Revolution in Britain in the second half of the eighteenth century was mainly driven by water power. Indeed, water was cheap and usually abundantly available (see Lewis & Maslin 2018, 197–201).

37. See McNeill & Engelke 2014.

38. ‘Golden spike’ is the informal designation. The technical description is ‘Global Boundary Stratotype Section and Point’ (GSSP). See https://en.wikipedia.org/wiki/Global_Boundary_Stratotype_Section_and_Point for more information (accessed 15 October 2024). The technical description of the alternative, defining a geological epoch using a numerical age, is ‘Global Standard Stratigraphic Age’ (GSSA). See https://en.wikipedia.org/wiki/Global_Standard_Stratigraphic_Age for more information (accessed 15 October 2024).

39. Isotopes of the same chemical element have a different number of neutrons in their nucleus. The most common isotopes of carbon are carbon-12 and carbon-13. The ratio between the two isotopes is variable. This is because plants prefer the (lighter) carbon-12 for their photosynthesis. Organic material will therefore contain proportionally more carbon-12 than carbon-13. The ratio between the two isotopes of carbon is expressed by a so-called delta value, $\delta^{13}\text{C}$ (unit = ‰). If the $\delta^{13}\text{C}$ value of a given material or environment is positive, it contains more carbon-13 than carbon-12 than standard, and if the $\delta^{13}\text{C}$ value is negative, it contains less carbon-13 than carbon-12. Fluctuations in the value of $\delta^{13}\text{C}$ of successive layers of sediment at the bottom of the ocean can be used as an indication of the extent to which the Earth was covered by ice sheets. The more extensive the ice sheets (and therefore the colder), the less vegetation and the less carbon in organic matter. The carbon from vanished vegetation has a negative $\delta^{13}\text{C}$ value and eventually enters the deep sea where it makes the $\delta^{13}\text{C}$ value of the ocean floor more negative. Fluctuations in the $\delta^{13}\text{C}$ value of the ocean floor are thus an indication of changes in climate (see Ruddiman 2014, 219–225 & 417–418 for a detailed explanation on this).

40. ‘Persistent organic pollutants (POPs) are organic compounds [i.e. chemical compounds with at least one carbon atom] that are resistant to environmental degradation through chemical, biological, and photolytic processes. Because of their persistence, POPs bioaccumulate with potential adverse impacts on human health and the environment. [...] Many POPs are currently or were in the past used as pesticides, solvents, pharmaceuticals, and industrial chemicals’ (see https://en.wikipedia.org/wiki/Persistent_organic_pollutant; accessed 13 November 2018).

41. Technofossils are remnants of human artefacts that fossilise and thus become part of the geological record (see Ellis 2018, 148–149).

42. See Rull 2024a, 939. Those wishing to read more about the critiques of the Anthropocene formulated by leading figures within the IUGS can consult Finney 2014, Gibbard & Walker 2014, Edwards 2015, and Finney & Edwards 2015. See also Autin & Holbrook 2012.

43. The term ‘megafauna’ refers to the large land animals that evolved on different continents during the Pleistocene. In Eurasia, for example, it refers to creatures that fire our imagination, such as the cave bear, the woolly rhinoceros and the mammoth (see <https://nl.wikipedia.org/wiki/Megafauna>; accessed 18 October 2018). Australia was once home to almost mythical creatures such as the *Diprotodon* and the *Dromornis*. The *Diprotodon* was a giant marsupial the size of a rhinoceros and an appearance somewhat akin to a bear (see <https://nl.wikipedia.org/wiki/Diprotodon>; accessed 18 October 2018). The *Dromornis* was a giant flightless bird measuring 3 metres high and weighing 500 kilograms (see <https://nl.wikipedia.org/wiki/Dromornis>; accessed 18 October 2018).

44. See Steffen *et al.* 2015, 93.

45. The reviews cited are taken from Rull 2024a, 939–940.

46. See Rull 2024a, 940.

47. Based on the statement issued by the IUGS at the end of the full procedure (see https://www.iugs.org/_files/ugd/f1fc07_ebe2e2b94c35491c8efe570cd2c5a1bf.pdf; accessed 15 October 2024).

48. See the AWG website (<http://quaternary.stratigraphy.org/working-groups/anthropocene/>) and see also <https://climateandcapitalism.com/2019/05/21/major-step-towards-formalizing-the-anthropocene/> (both accessed 16 October 2024).

49. See <https://www.anthropocene-curriculum.org/the-geological-anthropocene>, where you can click through to a separate page on each of the sites (accessed 16 October 2024). See also the overview in Rull 2024a, 940 (table 1).

50. Witze 2023, 441.

51. As told in the ‘Chair’s Column’ in the AWG’s 13th newsletter (see http://quaternary.stratigraphy.org/wp-content/uploads/2024/03/AWG-2023-Newsletter_final_CWST_16-March.pdf; accessed 16 October 2024).

52. See <https://www.washingtonpost.com/climate-environment/interactive/2023/anthropocene-geologic-time-crawford-lake/>. See also Witze 2023, 441 and DS 11/07/2023 (https://www.standaard.be/cnt/dmf20230711_96607844).

53. On Dutch elm disease, see <https://nl.wikipedia.org/wiki/Iepenziekte> and https://en.wikipedia.org/wiki/Dutch_elm_disease (both accessed 16 October 2024).

54. See the previously mentioned ‘Chair’s Column’ in the AWG’s 13th newsletter. On the destruction of Elugelab Island, see <https://en.wikipedia.org/wiki/Elugelab> (accessed 16 October 2024).

55. This paragraph is based on the previously mentioned ‘Chair’s Column’ in the AWG’s 13th newsletter and the IUGS statement also mentioned earlier.

56. A palynologist is a scientist who studies pollen and spores (see <https://en.wikipedia.org/wiki/Palynology>; accessed 26 October 2024).

57. Zalasiewicz (University of Leicester, UK) had been chair of the AWG from 2009 to 2020. He has been chair of the SQS since 2020, but had also remained a member of the AWG. Head (Brock University, St Catharines, Canada) is vice-chair of the SQS, but had also been a member of the AWG. Because of their dual roles, Zalasiewicz and Head had handed over leading the discussion on the AWG’s proposal within the SQS to the other vice-president and secretary.

58. See <https://www.nytimes.com/2024/03/05/climate/anthropocene-epoch-vote-rejected.html>. For an image of the front page in question, see <https://www.hillheat.com/articles/2024/03/06/scientific-leaders-no-anthropocene-vote-was-a-sham> (both accessed 16 October 2024).

59. See Witze 2023, 442.

60. Both the press release and the message to SQS members were published at <https://www.hillheat.com/articles/2024/03/06/scientific-leaders-no-anthropocene-vote-was-a-sham> (accessed 16 October 2024). See also Witze 2024a.

61. Available at <https://climateandcapitalism.com/2024/03/07/alleged-anti-anthropocene-vote-is-null-and-void/> (accessed 16 October 2024).

62. See <https://www.nytimes.com/2024/03/20/climate/anthropocene-vote-upheld.html>. See also Witze 2024b and <https://climateandcapitalism.com/2024/03/21/top-geology-body-denies-appeal-rejects-anthropocene-proposal/> (accessed 16 October 2024). The statement in question is the IUGS statement previously used and cited.

63. See <https://www.hillheat.com/articles/2024/03/06/scientific-leaders-no-anthropocene-vote-was-a-sham> (accessed 16 October 2024).

64. See <https://climateandcapitalism.com/2024/03/07/alleged-anti-anthropocene-vote-is-null-and-void/> (accessed 16 October 2024).

65. See <https://aoc.media/opinion/2024/03/27/la-bombe-anthropocene/> (accessed 16 October 2024) (English translation available at <https://www.makery.info/en/2024/04/02/english-the-anthropocene-bomb/>).

66. See https://www.standaard.be/cnt/dmf20240314_94967338.
67. Adam 2024.
68. Adam 2024.
69. Adam 2024.
70. The Great Oxidation Event is the period when the world changed dramatically as cyanobacteria began photosynthesis (see https://en.wikipedia.org/wiki/Great_Oxidation_Event; accessed 26 October 2024).
71. The Cambrian Explosion is the sudden and massive increase in life forms at the start of the Cambrian (see https://en.wikipedia.org/wiki/Cambrian_explosion; accessed 26 October 2024).
72. See <https://www.nature.com/articles/d41586-021-02448-z> (accessed 17 October 2024).
73. Gibbard *et al.* 2021 and Gibbard *et al.* 2022.
74. The discussion of Ruddiman’s *early anthropogenic hypothesis* in *Being Human in the Anthropocene* was largely based on Ruddiman 2003 and Ruddiman 2010.
75. See Ruddiman *et al.* 2020 for a recent state of the debate.
76. See Keeler 2022.
77. See <https://www.ecomodernism.org/manifesto-english> (accessed 17 October 2024).
78. See <https://anthroecology.org/why-i-resigned-from-the-anthropocene-working-group/> (accessed 17 October 2024). A pdf of the resignation letter is at https://anthroecology.org/wp-content/uploads/2023/07/ellis_AWG_resignation_2023_07_12.pdf.
79. See <https://theconversation.com/the-anthropocene-is-not-an-epoch-but-the-age-of-humans-is-most-definitely-underway-224495> (accessed 17 October 2024).
80. See <https://theconversation.com/what-the-anthropocenes-critics-overlook-and-why-it-really-should-be-a-new-geological-epoch-225493> (accessed 17 October 2024).
81. See Zalasiewicz *et al.* 2024, 984.
82. Foley *et al.* 2013.
83. Foley *et al.* 2013, 83.
84. On the control of fire and its impact, see Ellis 2018, 77 and Lewis & Maslin 2018, 93–94.
85. Waters 2022, 22.
86. Waters 2022, 3: ‘[Episodes] are long-lived (tens of thousands to millions of years), global and broadly are markedly time-transgressive with slow rates of process change.’
87. See Waters 2022, 22.
88. Rull (2024b) proposes ‘the *Global Humanization* Event’ or GHE. He prefers the term ‘humanisation’ instead of the Greek *anthropos* because he feels that this way it is more clearly about the impact of humanity and not about its presence as such. However, it can be objected that the term ‘humanisation’ is used improperly in this way (compare this with the dictionary meanings of the verb ‘to humanise’). It also remains to be seen whether the expression ‘the global humanisation event’ can be pronounced easier.
89. Hamilton 2017, 20.
90. Hamilton 2017, vii. See also 20–21: ‘A new object has appeared, the Earth System. Its arrival gave rise to the new paradigm of Earth System science, and the new science shaped our understanding of the new object.’
91. Hamilton 2017, 137–138.
92. Hamilton 2017, 9–10.
93. Hamilton 2017, 16–17.
94. See Hamilton 2017, 17.
95. See Hamilton 2017, 3.
96. See Hamilton 2017, 3.
97. See Hamilton 2017, 4.
98. See Angus 2016, 64.
99. Hamilton 2017, 7.
100. See Hamilton 2017, 6 & 7.
101. See Hamilton 2017, 5–6.
102. See Hamilton 2017, 4–5, 8, 129.
103. See Hamilton 2017, 8 & 130–131.
104. See Hamilton 2017, 139.
105. See Hamilton 2017, 36–39 (= the section ‘To doubt everything’). The following statements clarify the radicality of Hamilton’s position: “the Anthropocene’s advent [...] demands we set aside our accustomed understanding and reconsider everything” (p. 36); “the ideas that we have inherited from the era before the [Anthropocene] must all be open to question” (p. 37); and “In the face of the Anthropocene [...], we are obliged to doubt all our beliefs” (p. 38).
106. See Angus 2016, 29–30.
107. See Hamilton 2017, 27.
108. See <https://vimeo.com/55073825> (last checked 5 December 2024).
109. See the vision statement on RZL at <https://theo.kuleuven.be/nl/onderwijs/stuurgroep-rzl/docs/visie-tekst-rzl.pdf> (accessed 2 January 2020).
110. See https://www.standaard.be/cnt/dmf20190826_04575276.
111. See <https://www.youthforclimate.be/> (accessed 21 October 2024).
112. See https://www.standaard.be/cnt/dmf20220824_96664449.
113. See https://www.standaard.be/cnt/dmf20221023_93982721.
114. See https://www.standaard.be/cnt/dmf20181202_04004015.
115. See https://www.standaard.be/cnt/dmf20190125_04131164.
116. *De Standaard* talked about 25,000 participants according to the police and 50,000 according to the organisers (see https://www.standaard.be/cnt/dmf20211010_94015859). Another Flemish newspaper, *Het Laatste Nieuws*, quoted Anuna De Wever Van Der Heyden as saying there were at least 70,000 participants (see <https://www.hln.be/brussel/klimaatmars-organisatoren-tellen-70-000-deelnemers-a3d647ae/>).
117. See https://www.standaard.be/cnt/dmf20231203_96369995.
118. See <https://www.euronews.com/2019/05/26/green-wave-has-climate-change-impacted-the-european-elections> (accessed 22 October 2024).
119. See <https://www.euronews.com/my-europe/2021/11/24/eu-wouldn-t-have-plan-to-be-climate-neutral-without-greta-thunberg-says-frans-timmermans> (accessed 22 October 2024).
120. See https://www.standaard.be/cnt/dmf20240619_94235801.
121. See Wouters, De Vydt, Staes 2022.
122. See https://nl.wikipedia.org/wiki/Belgische_federale_verkiezingen_2019 and https://nl.wikipedia.org/wiki/Vlaamse_verkiezingen_2019 (both accessed 22 October 2024).
123. See <https://www.hln.be/binnenland/de-grote-peiling-groen-wordt-tweede-partij-van-vlaanderen-a5c-395be/>.
124. The results for the provincial councils are the only way in which a comparison between local elections and federal/regional elections is somewhat possible. It would not be correct to take the results for all municipalities together because local situations are too different (local parties, local cartels, Groen doesn’t have a list in every municipality, etc.). The results for the provincial council elections were taken from https://nl.wikipedia.org/wiki/Belgische_lokale_verkiezingen_2018 (accessed 27 October 2024).
125. See https://www.standaard.be/cnt/dmf20190523_04420030.
126. See <https://www.economist.com/international/2024/03/13/why-the-growing-gulf-between-young-men-and-women>.
127. See Van Aelst, Matthieu, Jacobs 2024.
128. On this, see Kristof Titeca’s opinion piece entitled ‘The sore point that is pushed by the climate girls’ that appeared in *De Standaard* on 19 August 2019 following an incident at the Pukkelpop festival during which De Wever Van Der Heyden and some friends were harassed (see https://www.standaard.be/cnt/dmf20190818_04565542) as well as the reportage entitled ‘Why men hate Greta and Anuna’ that appeared in *dS Weekblad* on 9 November 2019 (see https://www.standaard.be/cnt/dmf20191107_04705683). *De Standaard* also released a podcast on this issue entitled ‘Why some men feel so threatened by Greta Thunberg and Anuna De Wever’ (see https://www.standaard.be/cnt/dmf20191121_04728731).