

JOURNAL *of* NORTHERN STUDIES



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KYRRE KVERNDOKK

The Age of Climate Change

Cultural Change Temporalities and Crisis Awareness

ABSTRACT This article elaborates the multiple temporalities of climate change discourses and practises and discusses some possible common denominators in the timescales and time structures related to global warming. It first examines some of the key concepts in climate research, before discussing vernacular notions of time. Finally, some expressions and tropes that have impacted a trans-national popular climate discourse are examined. The timescales and temporal structures discussed have quite different extents, from millions of years to a generation or two. Some of these temporalities are chronological while others are cyclical. They are also about completely different phenomena—from geology to society and kin. However, the article concludes that they are interconnected through their focus on the present moment, and the temporal structure of *kairos*, in Frank Kermode's understanding of the term. In that regard, they are temporalities expressing a notion of a contemporary crisis, that is both urgent and of almost cosmological propositions.

KEYWORDS climate change, Anthropocene, the great acceleration, experiential time, family time, geological time and historical time, temporalities

Will the entire ice sheets covering Greenland and Antarctica eventually melt away?¹ If so, at what pace? How long will it take before it is too late to slow down the melting? And how much will the world's oceans rise? Questions like these are discussed by climate scientists, the news media, and an increasing proportion of the general public (e.g. Overland *et al.* 2019). In a special report on the Paris Agreement from 2018, the IPCC claimed that even a relatively moderate rise in temperature, such as the agreed limit of 1.5 degrees will still lead to continued ice melting for hundreds and thousands of years, and the sea level will rise in pace with this (Allen *et al.* 2018). And millions of people in completely different parts of the Earth will be displaced due to the rising sea level. This future scenario illustrates that the Earth is united as one climate system. It simultaneously shows how crucial the time dimension is in research, in politics, and in media representations of climate change issues. Anthropogenic climate change is not merely about higher temperatures, rising sea levels, climate refugees and extreme weather, it is also about time and temporality. Climate change is about entangled timescales, the rate of change, acceleration, paleoclimatic data and imaginaries of the future.

This article will elaborate on the multiple temporalities of climate change. I will explore the multiple aspects of the temporality in climate change discourse and examine some possible common denominators in the timescales and time structures related to global warming. The premise for the article is that time is both a universal physical phenomenon and a dimension of social life. On the one hand, time as it passes is completely independent of humankind. On the other hand, when time is experienced, described, measured or used as a device for synchronizing or comparing events and processes, it will always also be culturally and historically situated.

Climate change is on one side defined by geophysical temporality and might be regarded as universal, but as climate change also is affecting social life, the temporal dimension of climate change is also a cultural concern. This entwining of historical processes, human experiences and physical processes makes climate change temporality complex. In this article, I will explore the multiple temporalities of climate change from three empirical starting points. First, I will examine some of the key concepts in climate research that have eventually also become part of a popular climate change discourse. Second, vernacular notions of time will be discussed and contrasted to the academic concepts. Finally, the article will focus on some expressions and rhetorical tropes that have had a broad impact on Western climate discourse at the intersection of politics and mass media. These tropes are used to discuss how the relationship between the present and a climate-changed future is narratively framed.

The Anthropocene and the Great Acceleration

One of the concepts that has had the strongest impact in the public discourse on climate change is the *Anthropocene*—the geological age of humankind. The concept is just 20 years old. At the end of February 2000, the International Geosphere Biosphere Program (IGBP) held a conference in Cuernavaca, Mexico. Atmospheric chemist Paul Crutzen was one of the delegates. According to the anecdote, he was disturbed by the reference to the Holocene, the geological epoch that started at the end of the last Ice Age, when the other researchers talked about human impact on the Earth system, and said, seemingly spontaneously: “We are no longer in the Holocene anymore. We are in the ... *Anthropocene!*” (Warde *et al.* 2018: 165, italics in the original text).

Crutzen was not just anyone. Less than five years earlier he had been awarded the Nobel Prize in Chemistry for his work on the mechanisms that form and break down the ozone layer. He was also one of the initiators of the IGBP programme. His comment attracted considerable attention; in the next newsletter from IGBP he published an article, together with the biologist Eugene Stoermer that was simply called “The ‘Anthropocene.’” There they expanded on the thoughts behind Crutzen’s outburst at the conference a few months earlier. It was not a scientific article in the strict sense. The text was just over a page long and was formulated almost as a policy statement (Crutzen & Stoermer 2000: 17). Crutzen and Stoermer adduced various arguments showing that the human impact on the Earth system had become so extensive that science could no longer ignore the geological and ecological power of humans. Thus, we had entered the geological epoch of humankind. The statement soon impacted the natural sciences.² In 2009 an international stratigraphic commission appointed a working group to examine the designation of the new epoch. Seven years later they published their report, which ended up supporting Crutzen and Stoermer. The working group concluded that the influence of humankind on the Earth System had become so

fundamental that the Anthropocene must be reckoned as a distinct geological epoch (Zalasiewicz *et al.* 2017).

One of the questions this group discussed was when the Anthropocene began. Crutzen had proposed the Industrial Revolution as the starting point. The Agrarian Revolution was another suggestion. The working group, however, advocated the years around 1950. One core argument for suggesting that period was the testing of nuclear bombs. These tests had left lasting radioactive traces all over the Earth. Another, and equally important argument, was that several social, economic and demographic processes were significantly intensified around that time. This also concerned the human use of natural resources and thereby also emissions of CO₂ and other greenhouse gases (Zalasiewicz *et al.* 2015). In Earth System science, the temporal concurrence of these processes is referred to as *the great acceleration*. This concept was coined by Crutzen and two of his colleagues in 2007, as a contribution to the Anthropocene debate (Steffen *et al.* 2007).

The great acceleration is often portrayed as a series of uniformly designed graphs. These curves are pretty flat before they quickly point upwards, not unlike horizontal hockey sticks. In the article where the concept was launched, fifteen such steeply rising curves are reproduced. Twelve of them are presented in one sequence, to demonstrate the correlations in the exponential global growth in areas as diverse as pollution, gross domestic product, foreign direct investment, damming of rivers, consumption of water and fertilizer, urbanization, number of McDonald's restaurants, number of motor vehicles, number of telephones, and international tourism (Fig. 1). "The Great Acceleration is clearly shown in every component of the human enterprise included in this figure," as the scientists write in the caption to this sequence of graphs (Steffen *et al.* 2007: 617). In a follow-up article from 2015, the number of graphs has been increased to twenty-four; twelve of them show socio-economic changes while the remainder illustrate changes in the Earth System (Steffen *et al.* 2015). The visual presentation is undoubtedly effective and convincing. It arouses in the reader a precarious feeling that there is simply more and more of everything and that the world is spinning faster and faster.

This kind of visual rhetoric is not new for environmentalism. Similar graphs played a central role in the seminal environmental report *Limits to Growth* from 1972 (Meadows *et al.* 1972). It contains a total of 48 graphs with an average of three and a half pages of text in between them. Most of these curves point unmistakably upwards. Environmental scholar Kristian Bjørkdahl argues that the report established a visual rhetorical repertoire for environmentalism in the shape of the graphs and especially hockey stick graphs (Bjørkdahl 2018: 164). This repertoire has also been used by Anthropocene researchers.

The hockey stick graphs illustrate how the development is approaching a critical point, a *tipping point*, where the effects of the human impact on the Earth system become irreversible. The tipping point that has probably been most discussed in recent years concerns the concentration of CO₂ in the atmosphere. Today this has passed 400 ppm (parts per million) and the curve is pointing steadily upwards. Scientist and activist James Lovelock claims that 550 ppm is a "point of no return." There is still a little way to go before we get to that point, with today's figures of emission it will be reached around 2050 (Hessen 2018: 43). Others claim that we have already passed the tipping point. In 2008 the think tank The New Economics Foundation started a 100-month long countdown until 1 December 2016. This was, according to the think tank, the time that was left to save the planet. The countdown could be followed on the website Onehundredmonths.org. The site says: "When the clock stops ticking, we could be beyond our climate's 'tipping point,' the point of no return." The clock has long since stopped tick-

SOCIO-ECONOMIC TRENDS

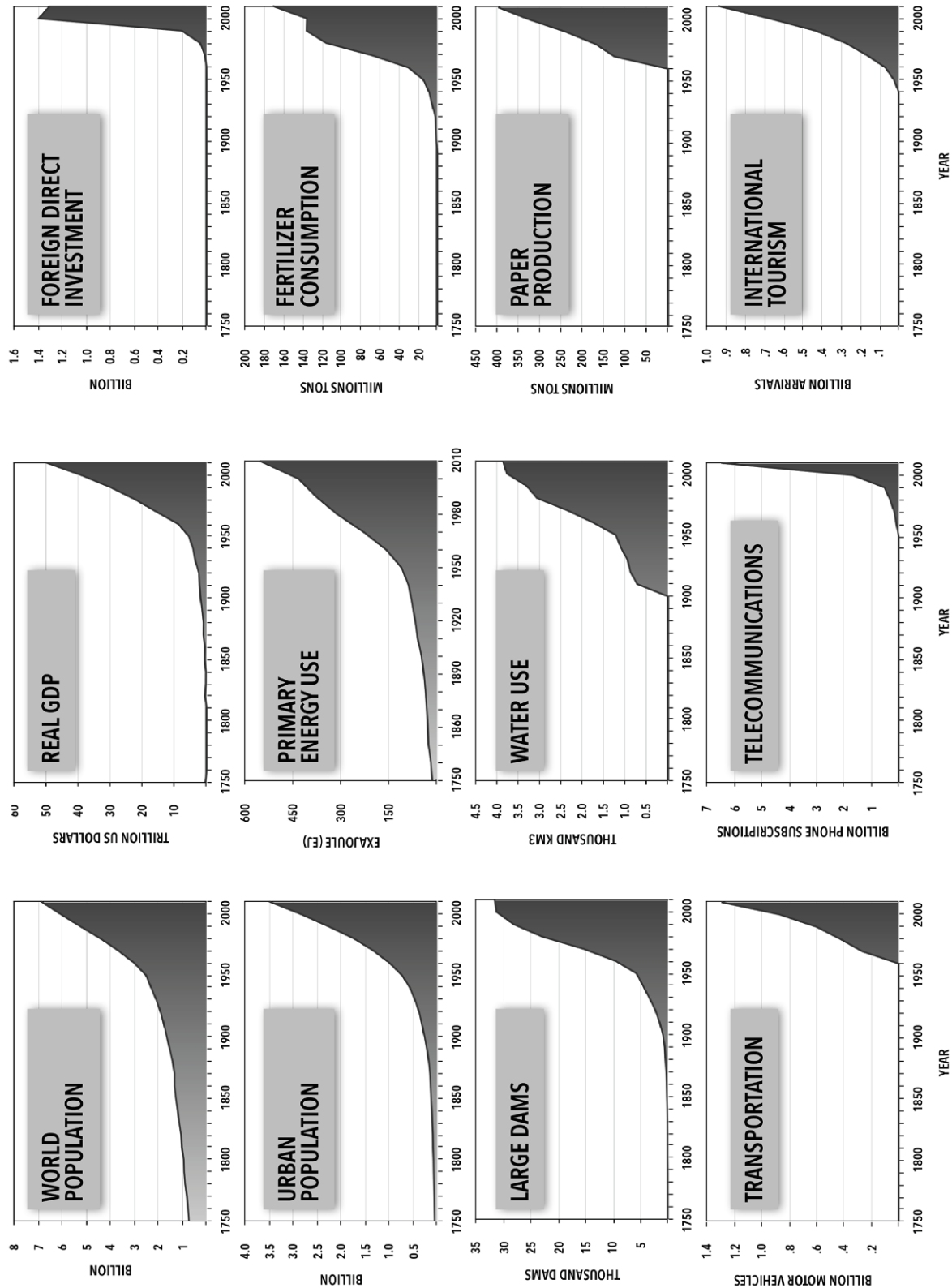


Fig. 1. The great acceleration as hockey stick curves. Illustration from Angus (2015). Diagram by Jamil Jonna (with adjustments December 2019) with data from Steffen *et al.* (2015). Printed with permission from the *Monthly Review*.

ing. The site still exists, but it is no longer updated. It is like a wrecked memory of a time when it was not yet too late.³

Geological and Historical Time Intertwined

The argument for introducing the Anthropocene as a geological epoch was not only about the extent of human influence on geology and ecology, but also about the duration. Geological epochs span long stretches of time. It is no more than 10,700 years since the *Holocene* replaced the previous epoch, the *Pleistocene*.⁴ That epoch, however, goes back more than 2.5 million years in time. Two of the members of “The Anthropocene Working Group” even argued that the human impact on the Earth System was so pervasive that the Anthropocene should not only be counted as a separate epoch, but as an *era*, which is a superior level in geological periodization. They claimed that there were compelling reasons to argue that the *Kenozoic era*⁵ was over, that is to say, the era that started 65 million years ago, when a large meteorite impact led to the extermination of the dinosaurs, after which mammals took over.⁶

From a geological perspective, humanity has a brief history. To name a geological epoch after humankind implies nevertheless that humanity is inscribed in what geologists call *deep time*. The assumption is that the imprint humankind makes on the globe will have consequences far into the future. Crutzen and Stoermer pointed out that contemporary human emissions of carbon dioxide will be measurable at least 50,000 years from now. The main argument for introducing the concept of the Anthropocene—the great acceleration—is the synthesis of socio-cultural and economic processes with such long-term geological consequences. In addition, certain specific events are often invoked, the previously mentioned nuclear tests after 1945, and also the invention of the steam engine in the eighteenth century and the internal combustion engine in the nineteenth century.

Several historians have focused on the long temporal aspect of the Anthropocene. The best known is Dipesh Chakrabarty. He has published a number of articles about how the Anthropocene impacts the notion of history (Chakrabarty 2009; Chakrabarty 2014; Chakrabarty 2018). His main argument is that the distinction between historical and geological time has collapsed (Chakrabarty 2009: 207 ff.).

It is, however, important to have in mind that these timescales actually are of the same kind. *Geological time* and *historical time* are both entities created by scholars. As linear and chronological scales describing processes of change, they are also modern inventions. They gradually divided as distinct timescales from the middle of the eighteenth century, as timescales representing the two emerging domains of the natural sciences and the human sciences. Both these timescales operate at a macro level. While geological deep time refers to the history of the planet, historical time refers to the history of humanity. (In a strict sense, historical time is even narrower. As the timescale of history as an academic discipline it is confined to the time period documented in written sources.) Thus, both timescales are global. Moreover, they have a similar structure; they are chronological, and are organized as epochs and periods. It is primarily the duration that separates them. Whereas geological time operates with millions and billions of years, historical time covers decades, centuries, or at most two or three millennia. Hence, Chakrabarty’s claim is first and foremost about duration. His statement that the distinction between these timescales has collapsed implies a considerably expanded geological extent to historical time. At the same time, the divide between nature and culture as domains of knowledge is blurred. This intertwining also implies that human history must be re-

garded as the history of a species, according to Chakrabarty. He points out that it is at the level of the species that humans work as a global and geological agent. The span of this entwined timescale is overwhelming and, he writes, transcends the scope of the human comprehension of history (Chakrabarty 2009: 221).

In other words, the entwining of timescales, which is summed up in the concept of the Anthropocene, implies that a lasting geological significance is ascribed to historical events and processes. And protracted geological processes can be changed or terminated in an instant. For instance, in just half a century, modern society has consumed major parts of the Earth's oil reserves. The oil that was formed over millions of years is transformed, within seconds, inside the internal combustion engine to become nitrogen oxides, carbon dioxide and water vapour. It is basically this transformation that has led to the climate crisis. The dimension of the crisis is central aspect of the Anthropocene concept. Thus, the concept also implies an orientation towards the present-day and immediacy. It signals that events and actions of today are about to change the world fundamentally. The hockey stick graphs look almost as if they extend past the length of the chart's y-axis, and this trend must be urgently reversed. The intertwining of the instantaneous and the almost eternal can scarcely be grasped intellectually, and it is more or less impossible to experience.

Experiential Time

Neither geological nor historical time are experiential timescales. They are academic tools for organizing events and processes in relation to each other. They are scales that measure and describe time through dates and intervals, but neither of them can be experienced directly.

Historical time is a timescale that describes changes in society over time (Hareven 1977: 59; cf. Koselleck 1985). It is the timescale of the discipline of history, and it is made commonly known through popular history and history teaching in school. Societal changes can of course be experienced, but such experiences are not necessarily the same as experiencing historical time in a strict sense. Societal changes are not necessarily experienced as historical processes per se, nor is it possible for people to experience events beyond their own lifetime. It is also difficult to fully imagine events that go further back in time than a few generations.

While it is difficult to experience historical time, it is completely impossible to experience the slow geological processes that are measured in geological time. A schooled eye can register how geological time has been deposited materially, for instance in ice cores. However, in order to be able to read the temporal information embedded in the layers of such a sample, advanced technological instruments are required.

Ice cores are important sources of information for climate research. Samples from Antarctica can provide information about the atmospheric climate as far back as 800,000 years ago. At the same time, these cores contain traces of human influence on the atmosphere, such as traces of nuclear tests and greenhouse gas emissions. Such ice core samples played a central part in Crutzen's argument when he launched the term *Anthropocene* (Antonello & Carey 2017: 193).

Ice cores are frozen time in cylindrical form. They visualize and materialize how deep time, so to speak, melts away when rising temperatures cause the ice sheets to melt. Such samples have been given a central role also in representing climate change, according to environmental historians Alessandro Antonello and Mark Carey (Antonello & Carey 2017). The ice cores are closely associated with the ice sheets from which they

are extracted. The widely shared understanding of the large inland glaciers as archives of climate history does something to the gaze of the climate-conscious Western audience. Images and films of calving glaciers and melting icebergs illustrate the accelerated earth processes of our time—how deep time processes are so to speak speeding up, how temperatures and sea levels are rising. These pictures are beautiful and spectacular, and simultaneously frightening. They show that the climate is changing right now, at this very moment.

The significance of the melting ice is, however, of a different kind from an experiential perspective. Just a generation ago, the ice off the north-west coast of Greenland was thick and stable for nine to ten months each year. Today it lasts three to four months, and even during this short period it might be unstable. For the locals, the ice represents completely different forms of time than the intertwining of historical time and deep time. The ice, as anthropologist Kirsten Hastrup describes in her contribution to this special issue of *Journal of Northern Studies*, is integrated in everyday life (Hastrup 2020, this issue). For an Inughuit living from traditional hunting, the game, the hunt and the ice are interlinked aspects of a way of life (Hastrup 2013: 77 ff.). According to Hastrup, the ice works as infrastructure for travelling and hunting. The rapid changes in the ice cycles thus create changed living conditions which can have severe consequences for the hunting communities. From the perspective of an Inughuit hunter, it is not deep time that is melting away with the ice. It is a traditional way of life that is vanishing, drip by drip.

Two central temporal forms in the Inughuit society are *the annual cycle* and *tradition*. Both are local, experiential aspects of everyday life. The rhythm of the year is cyclical and repetitive, while tradition is the aspect of social life that binds together the past, the present and the future, and thus represents cultural continuity (cf. Bauman 1972: 33; Glassie 1995: 409.).

In a traditional society, it is not the clock or the calendar that organizes the rhythm of work, but the variations and rhythms of nature. Tradition and the annual rhythm of nature are closely linked in a hunting society like the Inughuit. These temporalities are also closely connected in an agrarian society. In Scandinavian pre-industrial agrarian society, there was a finely-tuned interplay between the rhythm of nature and the organization of the working year and of social life. This changed during the nineteenth and early twentieth centuries. In the seminal book *Culture Builders*, ethnologist Orvar Löfgren has shown how time during the century was gradually disciplined into synchronized clock time both in the countryside and in the cities (Frykman & Löfgren 1987: 13 ff.). But even though the rhythm of work, the daily rhythm and the annual rhythm have been subordinated to clock time, the contemporary organization of time in everyday life is still not disconnected from the course of nature nor from the entanglement of tradition and the rhythms of the seasons.

In primary industries such as agriculture, fishing and reindeer herding, the interplay between working life and rhythms in nature is still substantial, and shifts in this rhythm can have serious consequences for these kinds of livelihoods in quite intricate ways. In reindeer herding, for example, when birch trees come into leaf earlier than usual it may impair the quality of the reindeer's milk. This is because, in the spring, they eat the birch buds, and the level of acidity changes as the leaves grow larger. Calving, however, occurs at the same time each year, and the consequence is that the new-born calves get milk containing more acid than is good for them.⁷

Annual climatic cycles and shifts in nature also affect the rhythms of everyday life even for those who do not work in primary industries. In the Nordic countries people

talk a lot about the weather. It is not only because Nordic people might have a relatively narrow small talk repertoire, but also because weather and seasonal variations structure social practices. Weather and the seasons prevent or facilitate activities such as gardening, beach life, picnics, having a beer at a sidewalk café, berry picking, mushrooming, biking, hiking and cross-country skiing. Nature's annual rhythm also finds cultural expression through annual festivals. Holidays such as Midsummer and Christmas not only mark the changes of nature over the year; through their repetitive character, they also create continuity and a sense of stability over the passing years. Furthermore, such rituals produce memories and imaginaries about what the weather and the seasons ought to be like. This is perhaps most directly expressed in the longing for a white Christmas, "just like the ones we used to know," to quote Irving Berlin.

The rhythm of the seasons is built into the annual cycles of society. The seasons are the basis for how the year is organized as working time and holiday time, and they are also the basis for the annual cycle of the educational institutions. The ritualization and institutionalization of the seasons make the social season into a tenacious cultural structure. What happens to the institutionalized rhythm of the year when the weather changes and the seasons shift? Anthropogenic climate change will eventually affect the rhythm of the seasons, and it is likely that this shift in rhythm also will affect the social year with its well-established and institutionalized rituals and traditions.⁸

Family Time

Experiential time is also present in the language used to discuss climate change in politics and the mass media. This is especially true when the future is brought up. While climate modelling and climate agreements operate with more or less arbitrary years, such as 2030, 2050 and 2100, the future is not given a date in the same way when climate policy or climate research is popularized. It is instead invoked as "the future of our children and grandchildren."

The French President Emmanuel Macron's speech to the Congress, when he visited the USA in April 2018, works as an example. One of the topics he addressed was anthropogenic climate change. He argued the importance of international agreements in order to bring about a transition to a low-emission society. This was an implied critique of the US decision to withdraw from the Paris Agreement. He did not mince his words. One of the rhetorical highlights came when he looked out over the assembly and asked: "What is the meaning of our lives, really, if we work and live, destroying the planet while sacrificing the future of our children?"⁹

"Our children" is a well-established trope in both climate politics and mass media coverage of the climate crisis. It might be tempting to ask why children have been given this central role in depictions of a future with a drastically changed climate; the Norwegian climate scientist Bjørn H. Samset has explained it in this way:

It is difficult to reach people when the major consequences of climate change are far into the future. You have to appeal to people by saying that it will get worse for their children and grandchildren.¹⁰

According to Samset, the invocation of children is thus a strategy to translate the abstract knowledge of climate research into something related to human experience, (Skjong 2016). There is no reason to doubt that he is right. But "the child" trope is more than just a pedagogical tool.

Literary scholar Rebekah Sheldon argues that this trope represents a heteronormative reproductive futurism. It reproduces hegemonic social norms by projecting them into the future (Sheldon 2016). One of her examples is Al Gore's bestseller *An Inconvenient Truth* from 2006. The book opens with a photograph of the young couple Al and Tipper Gore. They are sitting in a canoe on a river. Al is paddling while Tipper is resting her hands on a heavily pregnant belly. The caption reads: "Al and Tipper one month before the birth of their first child, Karenna, on the Caney Fork River, Carthage, TN, 1973" (Gore 2006). The text is informative, but it does not explain why this image of family happiness and the imminent birth of a child should open a book about climate change. The most obvious explanation is that a climate-changed future is understood in reproductive terms (Sheldon 2016: 38).

At the same time, the child trope has an inherent temporal structure, which organizes the relationship between the present and the future. Time is counted in generations, not years. This way of thinking about time is termed *family time* by social historian Tamar Hareven. Family time is a timescale based on individual life experiences. Through key life events such as childhood, adolescence, weddings, childbirth and parenting, the individual experiences are embedded in family cycles. Family time is lived and experienced time. At the same time, it transcends the individual life course, in the form of parents' and grandparents' time—or as children's and grandchildren's time. Both the past and the future thus become relational entities, which are about the relationship between self and past and future generations (Hareven 1977: 59).

The trope "our children" follows the relational logic of family time. It is a trope that describes not only the future, but also the relationship between the present and the future. When a climate-changed future is described in such terms, it is just as much about "us" as about "the children," in the sense that "our children" are "our" responsibility. And it is "our" task to ensure a safe future for "our children." This is how the trope was used by Macron and Gore. It is a trope that emphasizes today's actors. Future generations are at the mercy of today's actions.

While children in other contexts tend to be kept outside the political debate, this rhetoric enables them to make their views on climate policy heard. In Autumn 2018, 15-year-old Greta Thunberg became world-famous when she started her school strike for the climate. Six months later, she addressed global leaders at the World Economic Forum in Davos:

Adults keep saying: "We owe it to the young people to give them hope." But I don't want your hope. I don't want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. And then I want you to act. (Thunberg 2019: 24)

She turned the temporal trope "our children and grandchildren" into her position of enunciation. Her speech was a testimony of a time-traveller, traveling back in time from the future.

The Future as a Narrative

Climate research endeavours to make precise forecasts of changing climate. Climate modelling has a key role when other scientists, politicians and community planners try to predict the future. But future climate change is not the same as *the future*, and climate modelling cannot predict the future of society. The future depends on people—on the economy, technology, politics, culture and religion. These factors are far less predictable,

and cannot be foreseen fifty or a hundred years in advance (cf. Hulme 2011). The figures in the climate models show changes in certain climate factors. These are certainly alarming, but in order to understand their societal consequences, they need to be put into social and cultural contexts. These contexts are to a large extent only accessible through imaginaries and narratives. While the past exists as experiences, memories and physical remains, the future does not exist. It merely exists as expectations and imaginaries, and is enunciated through narratives.

One of the terms that is often used to describe a climate-changed future is “climate catastrophe.” This expression is usually written in the singular with the definite article as “the climate catastrophe.” The term brings together the various individual consequences of global warming into a single overall phenomenon. The catastrophe is termed as a single disaster, and it will affect everyone (Kverndokk 2015: 245 ff.). The corresponding Norwegian term, *klimakatastrofen*, first appeared in newspapers in 1984. Back then it referred to what the climate might be like after a nuclear war. But within a few years the term was instead linked to anthropogenic climate change.¹¹ One of the first times it was used in this way in an international context appears to have been 11 August 1986. That day the front page of *Der Spiegel* had this headline “Ozone-Loch, Pol-Schmelze, Treibhaus-Effekt: Forscher Warnen: Die Klima-Katastrophe.” As an illustration of the scientists’ warnings about the ozone hole, the melting polar ice caps and the greenhouse effect, the magazine chose a manipulated photograph of Cologne Cathedral. The cathedral was under water, with just the roof and the towers sticking up over the surface, and it was surrounded by open sea. The allegory of the Great Flood was obvious (Weingart *et al.* 2000; Schenk 2009: 219).

In the Western world, biblical disasters such as the Flood and the apocalypse provide a cultural framework for interpreting disasters in the present and the future (Holm 2012). Interpretative frameworks like these are tenacious cultural structures, which have survived the secularization of society. Today, the apocalypse is a dominant cultural model for describing a climate-changed future (Hulme 2008: 10 ff.). But the apocalypse is not just about the future. It is a narrative type that structures the relationship between the present and the future, and it is just as much about the present.

The climate apocalypse is not an apocalypse in the strict sense—it does not mark the end of the earthly world and the transition to a heavenly state. The apocalypse is rather a metaphor for a more or less total societal collapse, and a transition to what is called a post-apocalypse in popular culture (Kverndokk 2018: 159 f.). While the apocalypse in the Christian sense is due to take place sooner or later, transforming mortal life into celestial life, in the secular climate apocalypse there are instead earthly alternatives. The narrative of the climate apocalypse has a plot with two possible outcomes. The alternative to destruction tends to be described in terms of sustainable development, and a transition to a low-emission society. Nevertheless, the apocalypse metaphor brings associations to Christian eschatological beliefs about sin and punishment. In Christian eschatology it is the accumulated sins of our times that lead to the apocalypse. This is also the case in climate eschatology. That is to say: in climate-eschatological terms, humankind does not sin against God, but against future generations, against nature and the Earth. The apocalypse is nevertheless connecting the present and the future, in the sense that it is actions in the present that determine whether the apocalypse will come or not.

The apocalyptic climate catastrophe threatening our children’s future was also what Macron alluded to in his speech to the US Congress: “I believe in building a better future for our children, which requires offering them a planet still habitable in 25 years.”¹²

Imaginaries of a climate apocalypse gain further nourishment through *the tipping point* metaphor (Hulme 2008: 11). It is not just countdowns like *Onehundredmonths.org* that have used this term in an apocalyptic sense. So have the IPCC. When IPCC's *Fourth Assessment Report* was presented in 2007, the chairman Rajendra Pachauri said: "If there's no action before 2012, that's too late." And he added: "What we do in the next two to three years will determine our future." He repeated the same message at the launch of the next main report in 2015 (Bjørkdahl 2018: 163). And when the IPCC in 2018 published its report on the 1.5-degree target of the Paris Agreement, the media reception was equally apocalyptic. Under the heading "UN Says Climate Genocide is Coming. It's Actually Worse Than That" the American magazine *The Intelligencer* wrote:

[T]he real meaning of the report is not "climate change is much worse than you think", because anyone who knows the state of the research will find nothing surprising in it. The real meaning is "now you have permission to freak out". (Wallace-Wells 2018)

What Macron, Pachauri and articles like the one in *The Intelligencer* have in common is that they relate a future disaster to actions that are required here and now.

The End is Now

Literary scholar Frank Kermode has shown how "a sense of ending" has influenced notions of time in Western culture. According to Kermode, the relationship between an apocalyptic ending and the present follows a temporal structure he terms *kairos*. This is one of two Greek words for time. While *chronos* means the time that passes, *kairos* is the moment that decides how everything will end. It is, according to Kermode, "a point in time filled with significance, charged with a meaning derived from its relationship to the end" (Kermode 1967: 47). In other words, the end is embedded in this moment. If there is one temporal structure which might seem to unite the different ways in which anthropogenic climate change is described, it is the structure that Kermode terms *kairos*.

The timescales and temporal structures discussed in this article are all about the relationship between the past, the present and the future, but in vastly different ways. They have different extents in time and operate at different levels of scale. Some of them are linear while others are cyclical. They are also about completely different phenomena—from geology to society and kin. Nevertheless, they are interconnected through their focus on the present moment.

A common denominator is that lasting changes are now taking place, whether it is accelerating processes towards a tipping point or changes in annual rhythms and traditional ways of life. At the same time, it is also now that these changes can be slowed down, stopped or reversed. In the present, individual actors, be they politicians, scientists, activists or ordinary people, will be in contact with almost cosmological entities.¹³ When climate change is debated by scientists, politicians or popular media, the present is the crucial moment—for the future of the children, of humankind, of civilization and the biosphere—of the whole world. Although the climate crisis opens up long and almost unfathomable time perspectives, the age of climate change is also the age of the moment (cf. Hartog 2015). It is an age defined by the urge to act or refusal of action.

NOTES

- ¹ This article is a revised and translated version of the chapter “Klimatförändringarnas tid. Kulturella perspektiv på krismedvetande” in Gustafsson Reinius (ed.) (2020), pp. 164–181.
- ² In recent years, the concept of the Anthropocene has been criticized both because it is anthropocentric and because it presents the results of capitalist economic development as a general human phenomenon. However, the critics do not deny the idea that human actors have affected the biosphere and the Earth System in fundamental and dangerous ways. In this article, it is precisely human activity that is in focus. I shall therefore not go into the critique and instead focus on the temporal structure of the Anthropocene. See e.g. Moore (ed.) 2016; Haraway 2016; Malm & Hornborg 2014.
- ³ www.onehundredmonths.org/; access date 10 July 2020.
- ⁴ The etymology of the names of the geological ages is not particularly informative. The term *Holocene* is composed of the two Greek words *hólos*, ‘whole’ and *kainós*, ‘new,’ and thus simply means new, while the *Pleistocene* is derived from *pleiōn*, ‘more’ and *kainós*, ‘new,’ and thus simply means newer than the previous epoch.
- ⁵ ‘New life,’ from Greek *kainós*, ‘new’ and *zōē*, ‘life.’
- ⁶ Media Note: Anthropocene Working Group (AWG), www2.le.ac.uk/offices/press/press-releases/2016/august/media-note-anthropocene-working-group-awg; access date 30 January 2017.
- ⁷ Oral presentation of the phenologist Kjell Bolmgren at our joint seminar on natural and cultural time, Nordiska museet, Autumn 2017.
- ⁸ Questions such as these are examined in the research project “Calendars. Co-production of Seasonal Representation for Adaptive Institutions,” led by Scott Bremer at the University of Bergen, Norway. The project started in 2019 and will last for five years. In the course of these years, we will have more knowledge of how seasonal variations and societal institutions are or are not synchronized in the age of climate change.
- ⁹ YouTube, “French President Macron Addresses Congress 4/25/18,” www.youtube.com/watch?v=su-E5rDLntg; access date 3 May 2018.
- ¹⁰ In Norwegian: *Det er vanskelig å nå frem til folk når de store konsekvensene av klimaendringene ligger frem i tid. Man må appellere til folk ved å si at barna og barnebarna dine vil få det verre.*
- ¹¹ Nasjonalbiblioteket, NB N-gram; [www.nb.no/sp_tjenester/beta/ngram_1/#ngram/query? terms = menopause & lang = all & case_sens = 0 & freq = rel & corpus = Avis](http://www.nb.no/sp_tjenester/beta/ngram_1/#ngram/query?terms=menopause&lang=all&case_sens=0&freq=rel&corpus=Avis); access date 24 November 2018.
- ¹² YouTube, “French President Macron Addresses Congress 4/25/18,” www.youtube.com/watch?v=su-E5rDLntg; access date 3 May 2018.
- ¹³ Thanks to Anne Eriksen for this formulation.

REFERENCES

- Allen, M.R. *et al.* (2018). “IPCC, 2018. Summary for policymakers,” in *Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*, eds. V. Masson-Delmotte *et al.*, Intergovernmental Panel on Climate Change, pp. 1–26; www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf; access date 29 Dec. 2020.
- Angus, I. (2015). “When did the Anthropocene begin ... and why does it matter?” *Monthly Review*, 67: 4 (Sept. 2015); <https://monthlyreview.org/2015/09/01/when-did-the-anthropocene-begin-and-why-does-it-matter/>; access date 29 Dec. 2020.
- Antonello, A. & Carey, M (2017). “Ice cores and the temporalities of global environment,” *Environmental Humanities*, 2, pp. 181–203.
- Bauman, R. (1972). “Differential identity and the social base of folklore,” in *Toward New Perspectives in Folklore*, eds. A. Paredes & R. Bauman, Austin: University of Texas Press, pp. 31–41.
- Bjørkdahl, K. (2018). “Dommedagsdokumentet. Limits to Growth og verdens grafiske undergang” [‘The Doomsday documents. Limits to growth and the graphic destruction of the world’], in *Kollaps. På randen av fremtiden* [‘Collapse. At the edge of the future’], eds. P. Bjerregaard & K. Kverndokk, Oslo: Dreyer forlag, pp. 163–179.
- Chakrabarty, D. (2009). “The climate of history. Four theses,” *Critical Inquiry*, 2, pp. 197–222.
- Chakrabarty D. (2014). “Climate and capital. On conjoined histories,” *Critical Inquiry*, 1, pp. 1–23.

- Chakrabarty, D. (2018). "Anthropocene time," *History and Theory*, 1, pp. 5–32.
- Crutzen P. & Stoermer, E. (2000). "The 'Anthropocene'," *Global Change Newsletter*, 41, pp. 17–18.
- Frykman, J. & Löfgren, O. (1987). *Culture Builders. A Historical Anthropology of Middle-Class Life*, New Brunswick: Rutgers University Press.
- Glassie, H. (1995). "Tradition," *The Journal of American Folklore*, 430, pp. 395–412.
- Gore, A. (2006). *An Inconvenient Truth. The Planetary Emergency of Global Warming and What We Can Do About It*, New York: Rodale.
- Gustafsson Reinius, L. (ed.) (2020). *Arktiska spår. Natur och kultur i rörelse* ['Arctic traces. Nature and culture on the move'] (Nordiska museets handlingar 146), Stockholm: Nordiska museets förlag.
- Haraway, D.J. (2016). "Staying with the trouble. Anthropocene, Capitalocene, Chthulucene," in *Anthropocene or Capitalocene? Nature, History and the Crisis of Capitalism*, ed. J.W. Moore, Oakland: Kairos, pp. 34–76.
- Hareven, T. (1977). "Family time and historical time," *Daedalus*, 2, pp. 57–70.
- Hartog, F. (2015). *Regimes of Historicity. Presentism and Experience of Time*, New York: Columbia University Press.
- Hastrup, K. (2013). "Anticipation on thin ice. Diagrammatic reasoning in the High Arctic," *The Social Life of Climate Change Models*, eds. K. Hastrup & M. Skrydstrup, London & New York: Routledge, pp. 77–99.
- Hastrup, K. (2020). "Living (with) ice. Geo-sociality in the High Arctic," *Journal of Northern Studies*, 14:2, (this issue).
- Hessen, D.O. (2018). "Liv av død. Katastrofer som evolusjonær drivkraft" ['Life from death. Disasters as an evolutionary driving force'], in *Kollaps. På randen av fremtiden* ['Collapse: At the edge of the future'], eds. P. Bjerregaard & K. Kverndokk, Oslo: Dreyer Forlag, pp. 31–45.
- Holm, I.W. (2012). "The cultural analysis of disasters," in *The Cultural Life of Catastrophes and Crises*, eds. C. Meiner & K. Veel, Berlin: de Gruyter, pp. 15–32.
- Hulme, M. (2008). "The conquering of climate. Discourses of fear and their dissolution," *The Geographical Journal*, 1, 2008, pp. 5–16.
- Hulme, M. (2011). "Reducing the future to climate. A story of climate determinism and reductionism," *Osiris*, 1, pp. 245–266.
- Kermode, F. (1967). *The Sense of an Ending. Studies in the Theory of Fiction*, New York: Oxford University Press.
- Koselleck, R. (1985). *Futures Past. On the Semantics of Historical Time*, Cambridge, Mass.: MIT Press.
- Kverndokk, K. (2015). *Naturkatastrofer. En kulturhistorie* ['Natural catastrophes. A cultural history'], Oslo: Scandinavian Academic Press.
- Kverndokk, K. (2018). "Da Superdome ble Thunderdome. Katastrofeforestillinger og postapokalyptiske fantasier" ['When Superdome became Thunderdome. Catastrophic imaginaries and post-apocalyptic fantasies'], in *Kollaps. På randen av fremtiden* ['Collapse. At the edge of the future'], eds. P. Bjerregaard & K. Kverndokk, Oslo: Dreyer forlag, pp. 149–161.
- Malm, A. & Hornborg, A. (2014). "The geology of mankind? A critique of the Anthropocene narrative," *The Anthropocene Review*, 1, 62–69.
- Meadows, D.H., Meadows, D.L., Randers, J. & Behrens III, W. (1972). *Limits to Growth. A Report for The Club of Rome's Project on the Predicament of Mankind*, New York: Universe Books.
- Moore, J.W. (ed.) (2016). *Anthropocene or Capitalocene? Nature, History and the Crisis of Capitalism*, Oakland: Kairos.
- Overland, J. et al. (2019). "The urgency of Arctic change," *Polar Science*, 21, pp. 6–13; doi.org/10.1016/j.polar.2018.11.008; access date 29 Dec. 2020.
- Sheldon, R. (2016). *The Child to Come. Life after the Human Catastrophe*, Minneapolis: University of Minnesota Press.
- Schenk, G.J. (2009). *Katastrophen vom Untergang Pompejis bis zum Klimawandel*, Ostfildern: Thorbecke.
- Skjong, H. (2016). "Komfort trumfer klima" ['Comfort overtrumps the climate'], *Dagsavisen* 30 December, www.dagsavisen.no/innenriks/komfort-trumfer-klima-1.907163; access date 20 November 2018.
- Steffen, W., Broadgate, W., Deutsch, L., Gaffney, O. & Ludwig, C. (2015). "The trajectory of the Anthropocene. The great acceleration," *The Anthropocene Review*, 2:1, pp. 81–98.
- Steffen, W., Crutzen, P. & McNeill, J.R. (2007). "The Anthropocene. Are humans now overwhelming the great forces of nature?" *Ambio*, 8, pp. 614–621.
- Thunberg, G. (2019). *No One is Too Small to Make a Difference*, London: Penguin Books.

- Wallace-Wells, D. (2018). "UN says climate genocide is coming. It's actually worse than that," *Intelligencer* 10 October 2018; <http://nymag.com/intelligencer/2018/10/un-says-climate-genocide-coming-but-its-worse-than-that.html?fbclid=IwAR36uzViyWQu0gxYFxA-8HYf2aLDy3YjlA2XGo-SULTFhMoXKC5luBHVs0zg>; access date 22 November 2018.
- Warde, P., Robin, L. & Sörlin, S. (2018). *The Environment. A History of the Idea*, Baltimore, MA: Johns Hopkins University Press.
- Weingart, P., Engels, A. & Pansgrau, P. (2000). "Risks of communication. Discourse on climate change in science, politics and the mass media," *Public Understanding of Science*, 3, pp. 261–283.
- Zalasiewicz, J. *et al.* (2015). "When did the Anthropocene begin? A mid-twentieth century boundary level is stratigraphically optimal," *Quaternary International*, 383, pp. 196–203.
- Zalasiewicz, J. *et al.* (2017). "The working group on the Anthropocene. Summary of evidence and interim recommendations," *Anthropocene*, 19, pp. 55–60.

AUTHOR

Kyrre Kverndokk is Professor of Cultural Studies at the University of Bergen, Norway. He has published on Second World War memory, the history of folklore studies and the cultural history of natural disasters. He is currently leading the research project "The Future is Now. Temporality and Exemplarity in Climate Change Discourse."

kyrre.kverndokk@uib.no

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