

Future perfect: From the pandemic to the Paris climate agreement

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journals.sagepub.com/home/ant**Stuart Kirsch** 

Department of anthropology, University of Michigan,
Ann Arbor, MI, USA

Abstract

Fifteen years ago, Jane Guyer (2007) argued that the near future had largely disappeared from collective imaginaries, replaced by longer-term horizons associated with evangelical Christianity and free market capitalism. While not seeking to repudiate Guyer, this article argues that recent developments have radically altered relationships to the future. It points to a previously unrecognized connection between two of the most significant challenges facing humanity today: the experience of living through a global pandemic and international efforts to limit the harmful consequences of climate change. Responses to both phenomena invoke the grammatical structure of the future perfect tense. During the pandemic, people began to imagine themselves living at a future moment in time when they have already resumed participating in those activities they have been prevented from undertaking, an example of the future perfect. The Paris Climate Agreement, which encourages states and other parties to take action in the present so that in the future they will already have saved the planet, also relies on the future perfect. In reaction to the pandemic and climate change, the near future has reemerged as a focal point of temporal attention. This article examines how the future appears in the present and the contribution of the future perfect tense to the creation of alternative futures.

Keywords

Climate change, COVID-19 pandemic, future perfect, open futures, Paris climate agreement, temporality

Corresponding author:

Stuart Kirsch, Department of anthropology, University of Michigan, 1085 S. University Ave., Ann Arbor, MI 48109, USA.

Email: skirsch@umich.edu

The future perfect is the only grammatical space in which *tomorrow* can be activated. It is the closest grammar can come to utopia. –attributed to Ludwig Wittgenstein (Wall, 2016)

In an influential essay published fifteen years ago, Jane Guyer (2007) argued that the near future had largely disappeared from collective imaginaries. She attributed this shift to the convergence of popular ideologies associated with evangelical Christianity and free market capitalism, both of which are oriented towards long-term horizons. While not seeking to repudiate Guyer or her insights, this article argues that recent developments have radically altered relationships to the future. It points to a previously unrecognized connection between two of the most significant challenges facing humanity: the experience of living through a global pandemic and international efforts to limit the harmful consequences of climate change. Responses to both phenomena invoke the grammatical structure of the future perfect. During the pandemic, people began to imagine themselves living at a future moment in time when they have already resumed participating in those activities they have been prevented from undertaking, an example of the future perfect. The Paris Climate Agreement, which encourages states and other parties to take action in the present so that in the future they will already have saved the planet, also relies on the future perfect. In reaction to the pandemic and climate change, the near future has reemerged as a focal point of temporal attention.

This article seeks to understand how “the imagination of futures can change in response to changing times” (Rosenberg and Hardin, 2005: 9) and “what specific imaginations of the future do in the present” (Wallman, 1992; paraphrased by Pels, 2015: 78). In particular, it examines the influence of the future perfect tense on orientations towards the future, referring to actions that have not yet been undertaken but will already have been completed at a subsequent moment in time. Writing about the future perfect, the sociologist and philosopher Alfred Schutz (1972) recognized that the ability to imagine oneself in the future is essential to the formulation of alternatives to the status quo. Building on Schutz’s work, the social psychologist Karl E. Weick (1979: 198-199) argued that looking backwards from a moment in the future can help to identify the steps required to achieve one’s goals. Although these examples focus on individual aspirations, collective projects may also be organized through the future perfect. For example, historians have described the role played by the grammatical structure of the future perfect in mobilizing participation in the French revolution and Marxist politics (Edelstein, 2020), while others have warned about the promulgation of false promises about the future by totalitarian regimes (Bernstein, 1994) and high modernist states (Scott, 1999). Similarly, Elizabeth Povinelli (2011) argues that the future perfect provides an ethical horizon from which it is possible to evaluate actions undertaken in the present, which she identifies as a key dynamic of late liberalism.¹

The invocation of the future perfect during the pandemic and in response to climate change has shifted temporal attention back to the near future. This became apparent during the pandemic in response to the widespread sensation that time appeared to have stopped or to be repeating itself. As Didier Fassin (2021: 168) notes, “during the pandemic, the world lives in the present.” The future perfect tense provides a means to imagine life beyond the here and now by focusing on a moment in time at which

conditions are already different and the ordinary flow of time has resumed. The future perfect plays a slightly different role in relation to concerns about climate change. It focuses attention on the changes that must be made in the near future in order to have prevented the most severe consequences of climate change from occurring. It bears noting that alternative responses are present in both cases, with large numbers of people refusing to alter their behavior during the pandemic or denying that climate change is real. But for many others, the future perfect tense has acted as a kind of pathway that has facilitated the larger temporal shift.

In what follows, I introduce the future perfect tense by considering examples from prior research on magic spells in Melanesia that can be understood as a mode of engaging with the future. The article then examines how responses to both the pandemic and climate change invoke the future perfect. Written at a time when ethnographic research was not possible, the article draws in part on my subjective experiences during the pandemic. Based on recent research on global climate change policy regimes and science-based reporting on climate change, including discussions at annual meetings of the United Nations and participant observation at a climate change think tank in Berlin (Kirsch, 2020a; 2021), I also consider how the implementation of the Paris Agreement invokes the future perfect tense. In conclusion, I seek to explain how and why these developments have shifted attention to the near future, the contribution of the future perfect to this new temporal orientation, and what this reveals about the role of the future in the present.

Yonggom magic and the future perfect

Before embarking on a hunting expedition, a Yonggom man living in the lowland rain forest in Papua New Guinea may pause to address the other beings with whom he shares the landscape (Kirsch, 2006: 60–64). Similar invocations by indigenous hunters to their intended prey are found in other regions of the world and are frequently based on relationships “of reciprocal exchange between animals and the humans who hunt them” (Nadasdy, 2007: 251). Yonggom hunting spells have several distinctive properties. They rely on the everyday language of persuasion: they seek to entreat, evoke sympathy, and even exaggerate, calling out: “Come forward so that I can see you [because] I’m starving to death” (*menip kop, weetmore wana, ne ku munggi bopman*). They also use imperative verb forms: “You come here quickly!” (*kup ku kirot mene!*), conveying urgency to their appeal. But the feature I wish to emphasize in the context of this discussion is the accompanying shift from the present tense to a transitive verb, e.g., “Shoot, I am shooting” (*monbe, monbore*), referring to actions that will already have been undertaken by the hunter in the future. Included in this formulation is a reference to the successful completion of the act: “And then, I’m going home” (*de ambioom wana*). These spells refer to the desired outcomes as though they have already been accomplished. Yonggom magic operates in the future perfect.

Writing about the future perfect tense, Schutz (1972: 79) describes the process of imagining intended outcomes: “I have to visualize the state of affairs to be brought about by my future actions.” To accomplish a goal, the actor must fashion an image of

themselves in the future (Beckert and Suckert, 2021: 2). Schutz explains this process in the following way: “I have to place myself in my phantasy at a future time, when this action *will already have been accomplished*” (1972: 78; emphasis in original). This allows the actor to look backwards in time towards the present moment, making it possible to identify the intervening steps that “will have brought forth this future act” (Schutz, 1972: 78). He concludes that “the future is anticipated in the *future perfect tense*” (Schutz, 1972: 79; emphasis added).

The future perfect differs from the simple future tense in the following manner. The sentence “I will repair the fence tomorrow” refers to an action the speaker intends to complete at a future moment in time, after the act of speaking. The future tense may also be conditional, for example: “If it doesn’t rain, I will repair the fence tomorrow.” But in the future perfect, while the intended action also takes place *after* the moment of speaking, the past tense is used to convey a sense of completion: “By tomorrow, I will already have finished repairing the fence.” Note that the first two examples are open-ended, referring to events that have *yet to occur*; in both cases, claims are being made about intended but contingent futures. In contrast, the future perfect refers to an action *that has already been completed*, and thus treats this aspect of the future as an established outcome rather than just a possibility. The future perfect thus refers to “what will have been done” (Myers, 2001: 40).

The Yonggom regard their magic spells as efficacious because they consider humans and animals to be members of the same speech community (Kirsch, 2006: 63; see Kohn, 2013). Different species communicate with each other in multiple ways. This includes the actions of animals that are treated as omens which reveal future events, the appearance of animals in dreams, which convey future opportunities upon which one can act, and their everyday vocalizations, which provide valuable information. Some birds are even said to speak words in the Yonggom language, like the cuckoo dove *on kam*, which calls out “*kwi, kwi, kwi,*” meaning “like that, like that, do it like that.” The Yonggom view their magic spells as a way to respond to the other beings with whom they share the landscape.

The resulting communication between humans and animals is what gives Yonggom magic the power of performative utterances like the words of a judge announcing a verdict (Austin, 1962; Tambiah, 1979). Their spells seek to bring about a desired outcome by compelling the addressee to respond to their requests. For example, the spell for hunting guria pigeons (*on kurim*) described above calls on the bird to make itself visible to the hunter, so that he can shoot it with his arrows.

Another example of the relationship between Yonggom magic and the future perfect is evident in a song about a bird submerging itself in a river or stream on a hot day. The bird calls out “*kon kon*” to the other birds waiting in the surrounding forest, who then join their companion in the water. It is part of a song cycle performed before building a new house. The song presents an aural image of the birds singing to each other in call and response fashion: “*oh, kon kon, oh. . .*” and “*oh, kon kon, eh.*” It invokes the future perfect by imagining how the materials needed for the completion of the house have been swiftly assembled at the construction site, much like the birds rapidly followed their counterpart into the river.

I first heard these words being sung by a man who had cut a bundle of bamboo stems to use in making arrows. His invocation of the song referred to the other materials needed to complete the task, including tree resin, charcoal, and bark fiber, plus black palm, cassowary bone, or nails for the arrowheads. It was intended to work like a magic spell by invoking the moment in the future at which he would already have assembled the materials needed to make the arrows. Projecting his intentions into the future also allowed him to look backwards in time towards the present, helping him visualize the steps in the process. This corresponds with Weick's (1979) insight into how the future perfect tense helps to identify the course of action leading to the achievement of one's goals.

While these examples of Yonggom magic illustrate the future perfect tense, the converse is also true: attending to the future perfect helps to clarify what magic spells are intended to accomplish. Elsewhere I have argued that these magic spells seek to bring forth or make visible the conditions necessary for success (Kirsch, 2006: 63). However, that discussion failed to appreciate how magic does not simply make reference to capabilities in the present but also seeks to establish outcomes in the future. This omission reflects the historical tendency of anthropologists to focus on the ethnographic present and the past at the expense of the future (Munn, 1992: 115). However, this reanalysis suggests that magic may be better understood as an expression of the future perfect tense in which it becomes possible to envision a future in which one's goals have already been achieved. The use of magic to facilitate an alternative future is also comparable to how the future perfect tense is invoked in response to the pandemic and concerns about climate change in the Paris Agreement.

The future during the pandemic

Much has already been written about the coronavirus pandemic, including the devastating loss of life, disproportionate impacts on vulnerable individuals and communities, and deepening of entrenched inequalities (Fassin and Fourcade, 2021). But it is also important to describe and analyze the quotidian rhythms and experiences of social life during the pandemic given their significance for the current historical moment and influence on how people have come to think about temporality and the future. It is especially important to address these experiences as they occur, because our view of them changes with hindsight, making it difficult for people to accurately convey what they had previously been thinking and feeling. The following observations owe whatever degree of generalizability they may have to the unparalleled global synchronicity experienced during the pandemic and the accompanying hyperawareness of simultaneity afforded by access to new social media. Despite profound differences within and between communities (Fassin and Fourcade, 2021), the pandemic has challenged all of humanity at the same time.

Given that circumstances hardly seemed to change from one day to the next during the first year of the pandemic, the passage of time itself seemed to slow down or even stop. The present began to feel "stagnant" or "frozen" (Peutz, 2021: 298, referencing Visacovsky, 2017: 12). The German sociologist Niklas Luhmann (1976) identified the paradox that "the future never comes," by which he meant that we can only live in the present. But during the pandemic,

many people began to imagine an alternative relationship to the future. Their longing for change was projected into a moment in the future when they had already begun to enjoy doing the things they were missing, whether visiting family members or socializing with friends, attending a religious service or a football match, or taking a holiday. Invoking the future perfect thus became a common response to the temporal experience of feeling stranded in an unchanging present, resulting in what the anthropologist Nikolaos Olma (2020) characterizes as “living in the future.” Despite the prevalence of this orientation to the future, however, large numbers of people living in societies around the world refused to accept restrictions in the present regardless of the resulting risks to their personal futures.

It is due in part to the challenges and frustrations of living in a static present that people nourish anticipation of a future that is already filled up with activities that were previously taken for granted. A related perspective can be expressed through the past perfect grammatical form with a future time reference, “Soon you will be able to do all of the things you have done before” (Declerck, 1997: 49), but this combines anticipation with the willingness to accept deferred gratification. In contrast, the future perfect tense allows people to imagine themselves as already having resumed doing the things they miss.

At the outset of the coronavirus pandemic, an anxious public looked backwards to the Spanish flu of 1918 as a historical analogue for their experiences.² One of the most striking features of the Spanish flu was that it was so little memorialized or remembered. Despite the enormous death toll, almost nothing was written about it at the time (Crosby, 1989). This is not to say that the epidemic lacked lasting consequences, especially in relation to gender roles. The disproportionate toll of the virus on men between the ages of 20 to 40, combined with mass casualties to male soldiers on the battlefield of World War I, are thought to have contributed to changing gender roles in American society, ranging from increased participation in the workforce by women to greater freedom of expression exhibited by flappers during the roaring twenties, and to women successfully gaining universal suffrage, all of which occurred within a short period of time after the pandemic (Blackburn, Parker, and Wendelbo, 2018; Mann, 2020).³

But reading about the historical pandemic during the spring of 2020 when most countries in the world were dramatically shutting down their economies and curtailing social interaction, it was difficult to comprehend how an event as traumatic as the Spanish flu pandemic could have been largely forgotten in the interim, even though daily life in 1918 was not disrupted to the extent that it has been during the current pandemic. Yet writing this article in early 2021, a year after the onset of the coronavirus pandemic, it has become easier to understand why people in 1920 were so eager to put the experience of the pandemic behind them, much as people today readily embrace a future in which they imagine themselves as already having resumed ordinary life.

Another example of how the pandemic has affected perceptions of time was a widely circulated photograph of a tennis match in Adelaide, Australia, in January 2021, about one year into the pandemic (see Figure 1). What was surprising about the image was that the stands were filled with maskless spectators, even though this would have been entirely unremarkable at any other moment in recent history. This was possible



Figure 1. This photograph of a maskless tennis crowd in Adelaide, Australia, taken in January 2021, one year into the pandemic, generated cognitive dissonance around the world. Photo credit: Australian Associated Press.

because of Australia's ability to completely block access from abroad and its zero tolerance policy towards Covid-19 infections. But the image could not have been any more discordant to people living in the rest of the world at a time when public events were almost entirely banned, including religious observances and funerals. What made the photograph appear uncanny to so many was the cognitive dissonance associated with its status as a contemporary artefact.⁴ It was difficult to apprehend the photograph as anything other than a historical image despite the knowledge that it had appeared in that day's news.

The experience of daily life during the pandemic has shifted attention to the future after the pandemic ends rather than the present or the distant future. This relationship to the near future is driven in part by efforts to imagine alternatives to the unsatisfactory conditions in the present. The surprising lack of memorialization of the Spanish flu of 1918 suggests a comparable desire to leave those experiences in the past. But during the ongoing pandemic there are also limits on the ability to imagine the future: not only did the photograph of the unmasked crowd at the tennis match in Australia appear "surreal" to those at risk of exposure and illness from Covid-19 (Morgan, 2021), especially during the time before the vaccine was available, but it also painfully reminded viewers of just how far they remained from a return to normal life.

These examples from the pandemic illustrate how a society's orientation towards the future is influenced by everyday experience, which differs from Guyer's (2007) attributions of causality for changing temporal horizons to influential texts about religious

prophecy and neoliberal economics (see Wilks, 2007: 441). Most importantly, the new orientation towards the near future was influenced by the embrace of the future perfect tense, which has also been the case for the Paris Climate Agreement.

The Paris climate agreement as a future perfect construction

The Paris Agreement seeks to limit the global temperature rise to “well below 2° above pre-industrial levels” while “pursuing efforts” to restrict the increase to 1.5°C (UNFCCC, 2015: 3). When announced in 2015, the agreement was heralded by many as a significant breakthrough after years of collective inaction. Yet to other observers, the accord fell woefully short of what was required (Dehm, 2018) despite the recognition that it was intended as a starting point for commitments that would have to be ratcheted upwards over time to achieve its goals. When the US rejoined the Paris Agreement in 2021, for example, it pledged to reduce its carbon emissions by at least 50% by 2030, nearly doubling the cuts it had promised six years earlier, even though the country had fallen considerably behind in meeting its previous commitments.

Internationally, notable progress has been made on transitioning away from hydrocarbons, with nearly 30% of the world’s electricity already being supplied by renewable sources. Coal is widely acknowledged to be a sunset industry despite its persistence in some regions of the world (Cornot-Gandolphe, 2019). Reaching carbon neutrality by 2050 will also require phasing out petroleum, transforming proven reserves into stranded assets (Dehm, 2020a; Kirsch, 2020b), although the industry continues to push back against efforts to limit oil extraction and consumption. Meeting the goals of the Paris Agreement will also entail eliminating natural gas despite its value as a transitional fuel while the infrastructure for wind, solar, and other sources of renewable energy is being developed to take its place. Meanwhile, the science on climate change continues to be refined, including recent recognition of the need for stricter controls on the release of methane, which is far more potent as a greenhouse gas than carbon dioxide but has a much shorter lifespan in the atmosphere, and consequently its elimination would yield accelerated benefits.

Much as individual nations continued to control their own public health policies during the global pandemic rather than being directed by international authorities like the World Health Organization, states remain the primary actors in negotiations over the implementation of the Paris Climate agreement. Despite the resulting decentralization of international energy policy, addressing climate change is a collective action problem that requires participation by most or all states. The Paris Agreement relies on voluntary commitments known as Nationally Determined Contributions that each state establishes for itself rather than limits imposed by a top-down regulatory system such as the one attempted with limited success under the 1997 Kyoto Protocol (Doelle, 2017). Consequently, the United Nations lacks the power to compel signatories to fulfill their obligations.

To succeed, the Paris Agreement must limit the number of free riders that refuse to impose significant cuts or fulfill their commitments to reducing greenhouse gas emissions, which would make it much more difficult for the remaining countries to limit

rising temperatures on their own. This led the architects of the Paris Agreement to avoid setting the bar too high at the outset, which would have discouraged a significant number of countries from participating. As a result, nearly all of the 193 parties (192 countries plus the EU) that have signed the agreement have pledged to achieve carbon neutrality by 2050 or shortly thereafter. For many developing countries, however, making the necessary changes to their energy infrastructure is contingent on economic support from developed nations, especially in the form of technology transfer.

A significant challenge to implementing the Paris Agreement is the continued disparity in levels of economic development around the world. Uniformly reducing economic growth to meet climate change goals would risk perpetuating these inequalities, a matter of concern to developing nations since the original formulation of the concept of sustainable development in the Brundtland Report of 1987 (Reed, 2002: 206). To ensure broad political support for the Paris Agreement, commitments to reduce greenhouse gas emissions include provisions that allow for “catch-up” economic growth among the countries of the global south, accepting that their energy consumption will increase in the coming years, and only peak later on, even as some of the countries in the global north have begun to reduce their carbon footprints (Kirsch, 2021: 343). During UN discussions to finalize the implementation of the Paris Agreement, this delay is also explained with reference to the “common but differentiated responsibilities and respective capabilities” of the signatories to the agreement. This formula acknowledges that cumulative contributions to global greenhouse gases made by individual states have varied greatly over time, as has their ability to mitigate their own greenhouse gas emissions or adapt to the problems caused by climate change. For example, China currently emits approximately twice the volume of greenhouse gases as the US, although its cumulative contribution has been significantly lower, and its per capita emissions remain less than half the level of those in the US. The emphasis on responsibilities and capabilities also acknowledges that the most heavily industrialized economies of the world, with their greater historical responsibility for the present situation, are also better positioned to develop the necessary technology and make it accessible to other countries.

Another challenge facing the implementation of the Paris Agreement is that calculations for achieving carbon neutrality by 2050 are contingent on a *deus ex machina* solution of technology capable of removing ten percent of the existing carbon dioxide in the atmosphere (see Rajak, 2020). The reliance on technology that is not yet available to balance global carbon accounts has been criticized as an example of “magical thinking” (Rayner, 2016), but is intended to accelerate innovation. Current technology for capturing carbon dioxide directly from the atmosphere has high energy costs and is not economically scalable, although the establishment of international carbon markets could alter this calculation. The hope is that in the future this problem will already have been solved. Protecting and enhancing natural carbon sinks through conservation, reforestation, and rewilding will also reduce carbon dioxide levels in the atmosphere despite temporal constraints on their scalability imposed by the length of time it takes for a forest to mature.⁵

These proposals should not be conflated with ongoing efforts to capture carbon emissions directly from power plants and inject them into oil and gas wells, enhancing their

recovery rates. The parasitic energy load on power plants that implement carbon capture and storage will also decrease the economic competitiveness of oil and gas in relation to renewable energy, and questions have been raised about how long carbon dioxide will remain sequestered after being injected underground. Even if these technologies improve over time, at the very best they will only prevent the release of *additional* carbon dioxide into the atmosphere, not remove ten percent of the CO₂ already in the atmosphere as envisioned by the Paris Agreement. The economic investment required for developing this new technology is also likely to extend the working life of existing hydrocarbon projects to recover these expenditures, an outcome that may well be related to industry promotion of these initiatives.

The 2015 Paris Agreement is a 27-page document, the implementation of which must be negotiated during the annual meetings of the Conference of the Parties to the UN Framework Convention on Climate Change (see Kirsch, 2020a, 2021; Weisser and Müller-Mahn, 2017).⁶ Some of the mechanisms envisioned by the agreement, such as the establishment of a global carbon market or tax, continue to be debated. The purpose of a carbon market is to reduce greenhouse gas emissions by promoting the development of low carbon or carbon neutral technology and energy sources. The proposal is based on a neoliberal view of markets as providing the most efficient solutions to policy problems like climate change. This strategy has a successful precedent in an amendment to the US Clean Air Act in 1990, which reduced the emissions responsible for acid rain from coal-fired power plants at significantly lower costs than originally predicted. A number of industries have already voiced support for an international carbon tax in the hope that it would galvanize investment in new technologies (see Kirsch, 2021: 341-342).

But following Karl Polanyi's (1944) critique of fictitious commodities like land and labor, which subject nature and human lives to market forces, there are risks entailed in commodifying the right to pollute. One concern is that the resulting system could end up protecting carbon intensive technologies, as well as wealthy countries, when there is a willingness to pay carbon taxes rather than spend what is required to reduce emissions. A comparable dynamic during the installation of sulfur dioxide scrubbers in coal-fired power plants resulted in regional hot spots for acid rain, although in the case of climate change, what matters most is the total volume of greenhouse gas emissions rather than their geographic distribution. Another concern is that the system will defer important decisions about access to goods and services, such as the energy required to operate a hospital versus what it takes to mine for bitcoin, to market forces rather than establish priorities based on alternative values. Conversely, universal carbon markets or carbon taxes could accelerate the process of disruptive change for carbon-intensive technology and industries by driving the development and adoption of lower carbon or even carbon negative alternatives. But the lack of consensus on the desirability or political feasibility of a universal carbon tax may also reflect preferences for other economic policies to advance decarbonization, such as government investment in new technologies, economic incentives to promote their adoption, or even direct regulation of emissions.

Concerns about equity and social justice also figure prominently in these discussions given that countries in the global south already face far greater challenges in adapting to climate change than their counterparts in the global north. Even with the goal of limiting

the increase in temperature over preindustrial times to 1.5°C, it is not always recognized that 1.5° represents the global *average*, and that the actual temperature increase will vary considerably by region, with countries located closer to the Equator like Nicaragua potentially facing a plus 4°C world.⁷ Debates about the financial responsibilities of historically large emitters of carbon dioxide and other greenhouse gases remain stalemated, with the US and other countries from the global north blocking demands for compensation for loss and damage caused by climate change (Dehm, 2020b; Serdeczny, Waters, and Chan, 2016). However, there are numerous court cases pending in multiple legal jurisdictions that seek to hold oil companies directly accountable for their share of the costs associated with the impacts of climate change (Ganguly, Setzer, and Heyvaert, 2018). For example, the Dutch courts recently ruled that Royal Dutch Shell Plc. should reduce its emissions more quickly than it had planned on the grounds that the company is violating human rights by contributing to global warming.⁸ It remains to be seen whether these efforts will succeed in holding the petroleum industry liable for the social and environmental costs of climate change, including its responsibility for promoting climate change denial that delayed earlier responses to the problem (Supran and Oreskes, 2017).⁹

The Paris Climate Agreement relies on a future perfect orientation which requires that actions to reduce greenhouse gas emissions be undertaken today to avoid the worst consequences of climate change in the future. This argument is increasingly being made with reference to a “rapidly narrowing window of opportunity” during which these changes must be implemented (UNFCCC, 2022: 30). Gradually scaling up the necessary interventions over time might make sense in the absence of the political will to act more quickly, or even the failure to reach agreement on how to best achieve these goals. But continued delay in addressing the underlying problems increases the likelihood that in the future, we will already have failed to protect the planet from the most severe consequences of climate change, the negative version of the future perfect.¹⁰ Much like Povinelli’s (2011) notion of a future horizon from which it is possible to assess ethical decisions in the present, current efforts to meet the challenges of global climate change through the Paris Climate Agreement are being evaluated from the perspective of the future. This involves not only asking whether enough is being done now, but also from the vantage point of the future, *whether we will have done enough* to limit climate change.

Like the magic spells from Melanesia discussed in this article, which seek to facilitate intended outcomes by invoking their successful completion, the Paris Agreement operates in the future perfect tense. This was first suggested to me by what one of the participants at the UN climate change meetings in Katowice, Poland, in 2018, referred to as the need to establish the conditions necessary to “keep the promise of Paris” (cited in Kirsch, 2020a: 832). Similarly, the Intergovernmental Panel on Climate Change (IPCC) recently pointed out that goals which help “people envision a future significantly different than [the] present” promote transformational change (UNFCCC, 2022:1–70). Much like Yonggom magic, these discussions and the accompanying reports issued by the IPCC, are performative in their ability to establish shared scientific understandings. But the members of the High Ambition Coalition representing more than fifty countries still need to persuade their reluctant counterparts to set, fulfill, and ideally exceed their Nationally Determined Contributions to reduce greenhouse gas emissions. To

accomplish this, they must convey a sense of urgency, like the magic spells analyzed here. Spelling out the consequences of failing to achieve these goals is intended to compel the parties to the agreement to take action in the present. They seek to activate the utopian possibility that in the future, they will already have spared the planet from the worst ravages of climate change.

Conclusion

Luhmann (1976: 130) observed that “the history of the future does not reach back very far” from the present, noting that it was only in the 17th and 18th centuries that the future became elaborated as a focus of attention. It was during this period that the future became *open* to new possibilities rather than being filled up by the reproduction of the past. The future also became invested with optimism through the French revolution, Darwinian insight into evolution, and the teleology of progress. Luhmann (1976: 130) also explained that with the emergence of modernity, the present becomes a switch or a turning point to the future. As I have argued in this article, the invocation of the future perfect in response to the pandemic and climate change has influenced relationships between the present and the future, resulting in a focus on the near future.

Anthropologists have been critical of the way that crises are characterized as disrupting daily life by asserting that the event in question is other than ordinary, concealing the continuity between the past and the present (Masco, 2017; Roitman, 2014). Janet Roitman (2014) explains that most crises are a long time in the making, during which multiple warnings are issued but not heeded, as was the case for the risks posed by the global pandemic and climate change. She is also attentive to the ways that crises are mobilized to point fingers or assign blame for earlier failures, which parallels Povinelli’s insights into how late liberalism invokes the future perfect as a horizon from which to evaluate decisions made in the present. But notwithstanding the anthropological critique of the concept of crisis, it is still important to consider how devastating events such as the pandemic, or the high stakes of the climate crisis, capture people’s attentions, influence their behavior, and alter their temporal orientations. Tristan Loloum (2020: 306) has even suggested that the experience of multiple, overlapping crises may be partially responsible for the recent anthropological turn towards the future.

Living through the pandemic and the climate crisis at the same time not only provides a valuable comparative perspective on the challenges they present, but may also influence how people respond to both of them. The recognition that it was possible to stop the global economy during the pandemic was initially seen as a hopeful sign that it could be done again, if needed, to reduce carbon emissions (Atelier d’Écologie Politique, 2020; Latour, 2020; Maçães, 2020).¹¹ But the populist push-back against the extended lock-down, and especially against efforts to reimpose restrictions after they were initially relaxed, suggests that the lever to bring the economy to a halt can only be pulled once, and that we have already used up the opportunity to do so during the pandemic. Greater recognition of the vulnerability of the planetary ecosystem stemming from the zoonotic origins of the pandemic and its far-reaching multispecies consequences (Lagrou, 2020; Liu, 2020; Liu, 2020; Worster, 2020) may have increased awareness of the need to prevent even more

devastating impacts from global climate change. But as the duration of the pandemic continues to be extended, enthusiasm for resuming life in our familiar comfort zones increasingly portends a wholesale return to the status quo ante and decreases the likelihood that what we have learned from this crisis will be applied to the next. Nonetheless, there is still a possibility that the pandemic will serve as a switch or turning point to an alternative future by conveying the heightened sense of urgency needed to address another world-changing problem in the form of climate change.

When it comes to implementing the Paris Climate Agreement, the opportunity to bring a more promising future into being may be a better motivator than messages of fear, despite the ubiquity of the latter.¹² The dystopian vision of the future conveyed by contemporary science fiction offers a prominent example. Accompanying the abundant images of zombies and the annihilation of all human life on the planet beyond a handful of survivors is the fear that it may already be too late to achieve an alternative outcome. Phrased in the language of the future perfect, this would be: in the future, we will already have failed to save the planet. The resulting concerns can be broken down into two competing messages. On the one hand is the conservative perspective that it is no longer possible to change the future, which offers a release from the responsibility to address the problems of the future in the present. This is a vision of a catastrophic future that is inevitable, and in which we are pardoned for our failure to have acted in return for our willingness to accept an apocalyptic fate, if not for ourselves than for future generations (see Nordblad, 2021b). For some there may even be a sense of relief in not having to worry about the future of the planet. But the alternative is that we can treat these messages as an omen of a possible future that compels us to take action in the present (Dupuy, 2002, cited in Nordblad, 2021a: 335, n.25).

By focusing on solutions, the Paris Climate Agreement seeks to move beyond the frightening narratives that dominate contemporary discourse on climate change. This is in keeping with the alternative conjugations of the future discussed in this article. Both the simple future tense and its conditional counterpart make provisional claims about what might happen. In contrast, the future perfect refers to actions that have already been completed, suggesting a potential advantage for conveying positive aspirations for the future.¹³

Whereas Luhmann (1976: 132) looked to modernity as the origin of a future with “emergent properties and not-yet-realized possibilities,” Julia Nordblad (2021a) points to the threat posed by climate change to foreclose future opportunities and the corresponding need to maintain an “open future.” This is especially important in relation to the rights and interests of future generations, a concern that is familiar to us from the discourses of sustainability and sustainable development, which recognize the obligation to leave behind a world that is not diminished by our actions (Nordblad, 2021b). Nordblad (2021a) argues that it is inappropriate for politicians to represent or speak on behalf of their successors, whose values may differ from their own. In contrast, every generation has an ethical responsibility to respect the political choices of their successors. The protection of an open future represents a form of intergenerational solidarity by preserving the options and opportunities of subsequent generations (Nordblad, 2021a: 341, 342). Even though it may not be ambitious or expeditious enough to achieve its goals, the

Paris Climate Agreement seeks to ensure that the future remains open: that limiting climate change now protects the rights of future generations.

This article seeks to explain how and why the pandemic and the need to address climate change have prompted a reorientation towards the near future, how the future perfect tense has contributed to this temporal shift, and what these changes reveal about the role of the future in the present. The responses to the pandemic and climate change indicate that multiple factors are capable of influencing relationships to the future, including the sense during the pandemic that the present had become stagnant or frozen, and the problem of climate change, the scale of which requires that action be undertaken now to ensure that in the future the problem has already been resolved. These examples suggest that the way the future appears in the present is a variable with many possible values. Temporal orientations can change rapidly, as illustrated by the resurgence of attention to the near future during the pandemic. However, change can also be very slow to occur, as in the case of the gradual recognition and response to climate change and the delay in implementing the Paris Agreement.¹⁴

I have also traced one potential pathway through which such changes take place, the invocation of the future perfect tense. It is through the grammatical structure of the future perfect that the response to both the pandemic, in the sense of looking forward to a moment at which people are already able to undertake activities that currently remain off-limits or hazardous, and climate change, in relation to tasks that must be carried out now in order to have already overcome the problem in the future, are taking place. However, it is also possible that other grammatical structures or forms, such as the subjunctive mood, which refers to actions that have not yet occurred by expressing what one wishes for or imagines, might play a comparable role in shifting attentions and intentions towards the future.

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ORCID iD

Stuart Kirsch  <https://orcid.org/0000-0002-3448-1979>

Notes

1. The future perfect and related concepts also appear in other ways in the recent anthropological literature. Kregg Hetherington (2016) argues that surveying, and the planning fields in general, invoke the future perfect, while Pedersen and Nielson (2013) refer to the future possibilities embedded in development projects as “trans-temporal hinges.” In contrast, Andrea Ballesterio (2019) shows how water activists in Costa Rica and Brazil avoid the future perfect in favor of action in the present.
2. Other historical analogues include the HIV/AIDS pandemic in the 1980s (Boellstorff, 2020) and 19th-century cholera outbreaks (Rajković, 2020).
3. Lessons from historical disasters reveal the rich possibilities of *communitas*, as exemplified by the language of solidarity during the early months of the pandemic, conveying the message that “we’re all in this together,” as well as the liminality and anti-structure that fuel accompanying social movements, which have the potential to drive structural transformation (Oliver-Smith, 1986; Peutz, 2021; Turner, 1974), as exemplified by widespread mobilization around Black Lives Matter in the US during the pandemic.
4. As one of the anonymous reviewers pointed out, the presence of unmasked spectators at the European football championship six months later had a very different symbolic valence, as they were rejecting government rules requiring them to wear masks.
5. Comparable efforts are required to conserve “blue carbon” in the ocean, which is stored in kelp beds, seagrass meadows, and mangrove forests.
6. The Paris Climate Agreement has also been criticized for its technical, post-political approach (Swyngedouw, 2010; Weisser and Müller-Mahn, 2017).
7. Equivalent to more than seven degrees Fahrenheit.
8. The company responded by dropping “Royal Dutch” from its name and moving its headquarters and stock listing to London.
9. There are parallels and probably interconnections between climate change denialism, which was fueled by the petroleum industry (Supran and Oreskes, 2017) and morphed into a generic anti-science ideology, and the weaponization of vaccine hesitancy into the virulent anti-vaxxer movement.
10. As Ulrich Beck (1992: 34) observes, in such circumstances the future takes the place of the past in determining the present, requiring us to “become active today in order to prevent, alleviate, or take precautions against the problems and crises of tomorrow.”
11. Despite dramatically lower energy consumption during the pandemic, the level of greenhouse gases in the atmosphere continued to rise, albeit not as rapidly as before.
12. It also suggests a means to move beyond the “politics of resignation” in which contemporary circumstances are seen as natural or inevitable even when they are undesirable (Benson and Kirsch, 2010).
13. In contrast, Chloe Ahmann (2019: 329) describes the “subjunctive politics” that cast doubt on whether something will happen, including the “preemptive foreclosure” of opportunities.
14. Subsequent crises inevitably impinge on these events in unanticipated ways. For example, Russia’s invasion of Ukraine complicates efforts to meet the goals of the Paris Agreement. The economic boycott of Russia, an important supplier of oil and gas to Europe, has prompted calls to both accelerate the development of renewable energy and pause plans to phase out coal and natural gas.

References

- Ahmann C (2019) Waste to energy: Garbage prospects and subjunctive politics in late industrial Baltimore. *American Ethnologist* 46(3): 328–342.
- Atelier d'Écologie Politique (2020) It's not time to resume. August Bowen M (transl.) Available at: https://atecopol.hypotheses.org/tribune-ne_pas_reprendre-en4 (accessed 20 August 2020).
- Austin JL (1962) *How to Do Things with Words*. Oxford: Oxford University Press.
- Ballestero A (2019) *A Future History of Water*. Durham: Duke University Press.
- Beck U (1992) *Risk Society: Towards a New Modernity*. Newbury Park: Sage.
- Beckert J and Suckert L (2021) The future as social fact. The analysis of the future in sociology. *Poetics* 84. Article 101499.
- Benson P and Kirsch S (2010) Capitalism and the politics of resignation. *Current Anthropology* 51(4): 459–486.
- Bernstein MA (1994) *Foregone Conclusions: Against Apocalyptic History*. Berkeley: University of California Press.
- Blackburn CC, Parker GW and Wendelbo MW (2018) How the 1918 flu pandemic helped advance women's rights. *Smithsonian*. 2 March. Available at: www.smithsonianmag.com/history/how-1918-flu-pandemic-helped-advance-womensrights-180968311/ (accessed 2 December 2020).
- Boellstorff T (2020) *Notes from the great quarantine: Reflections on ethnography after COVID-19*. Wenner-Gren Foundation. Available at: <http://blog.wennergren.org/2020/06/> (accessed 20 August 2020).
- Cornot-Gandolphe S (2019) Status of global coal markets and major demand trends in key regions. French Institute of International Relations (IFRI). Available at: <https://www.ifri.org/en/publications/etudes-de-lifri/status-global-coal-markets-and-major-demand-trends-key-regions> (accessed 10 July 2020).
- Crosby A (1989) *America's Forgotten Pandemic: The Influenza of 1918*. Cambridge: Cambridge University Press.
- Declerck R (1997) The past perfect with future time reference. *English Language and Literature* 1(1): 49–61.
- Dehm J (2018) Reflections on Paris: Thoughts towards a critical approach to climate law. *Revue Québécoise de Droit International*. September: 61–91.
- Dehm J (2020a) Law and the “value” of future expectations: climate change, stranded assets and capitalist dynamics. In *Verfassungsblog on Materials Constitutional*. 6 March. Available at: <https://verfassungsblog.de/law-and-the-value-of-future-expectations-climate-change-stranded-assets-and-capitalist-dynamics/> (accessed 20 March 2020).
- Dehm J (2020b) Climate change, “slow violence” and the indefinite deferral of responsibility for “loss and damage.” *Griffith Law Review* 29(2).
- Doelle M (2017) Assessment of strengths and weaknesses. In: Klein D, Carazo MP and Doelle M (eds) *The Paris Agreement on Climate Change: Analysis and Commentary*. Oxford: Oxford University Press, pp.375–388.
- Dupuy JP (2002) *Pour un Catastrophisme éclairé: Quand L'impossible est Certain*. Paris: Seuil.
- Edelstein D (2020) Future perfect: Political and emotional economies of revolutionary time. In: Edelstein D, Geourlanos S and Wheatley N (eds) *Power and Time: Temporalities in Conflict and the Making of History*. Chicago: University of Chicago Press, pp.357–378.
- Fassin D (2021) The moral economy of life in the pandemic. In: Fassin D and Fourcade M (eds) *Pandemic Exposures: Economy and Society in the Time of Coronavirus*. Chicago: Hau, pp.155–176.

- Fassin D and Fourcade M (eds) (2021) *Pandemic Exposures: Economy and Society in the Time of Coronavirus*. Chicago: Hau.
- Ganguly G, Setzer J and Heyvaert V (2018) If at first you don't succeed: Suing corporations for climate change. *Oxford Journal of Legal Studies* 38(4): 841–868.
- Guyer JI (2007) Prophecy and the near future: Thoughts on macroeconomic, evangelical, and punctuated time. *American Ethnologist* 34(3): 409–421.
- Hetherington K (2016) Surveying the future perfect: Anthropology, development and the promise of infrastructure. In: Harvey P, Jensen CB and Morita A (eds) *Infrastructures and Social Complexity: A Companion*. London: Routledge, pp.40–50.
- Kirsch S (2006) *Reverse Anthropology: Indigenous Analysis of Social and Environmental Relations in New Guinea*. Stanford: Stanford University Press.
- Kirsch S (2020a) Why Pacific Islanders stopped worrying about the apocalypse and started fighting climate change. *American Anthropologist* 122(4): 827–839.
- Kirsch S (2020b) Running out? Rethinking resource depletion. *The Extractive Industries and Society* 7: 838–840.
- Kirsch S (2021) Talanoa dialogue at UN climate change meetings: The extraordinary encompassment of a scale-climbing Pacific speech genre. *Oceania* 91(3): 330–348.
- Kohn E (2013) *How Forests Think: Toward an Anthropology Beyond the Human*. Berkeley: University of California Press.
- Lagrou E (2020) Nisun: La venganza del pueblo murciélago y lo que nos puede enseñar sobre el nuevo coronavirus. (transl. Lombida R) Available at: <https://caminero1320.wordpress.com/2020/04/14/nisun-la-venganza-del-pueblo-murcielago-y-lo-que-nos-puede-ensenar-sobre-el-nuevo-coronavirus-por-els-lagrou/> (access 10 May 2020).
- Latour B (2020) What protective measures can you think of so we don't go back to the pre-crisis production model? (transl. Muecke S). Available at: http://www.bruno-latour.fr/sites/default/files/downloads/P-202-AOC-ENGLISH_1.pdf (accessed 20 August 2020).
- Liu A (2020) “Chinese Virus,” World Market: The best safeguard against the novel coronavirus is the ability to voluntarily withdraw oneself from capitalism. *N+1*. March 20. Available at: <https://nplusonemag.com/online-only/online-only/chinese-virus-world-market/> (accessed 20 August 2020).
- Loloum T (2020) Containing the future shock. *Social Anthropology* 28(2): 306–307.
- Luhmann N (1976) The future cannot begin: Temporal structures in modern society. *Social Research* 43(1): 130–152.
- Mações B (2020) The great pandemic was an economic revolution. *Foreign Policy*. June 22. Available at: <https://foreignpolicy.com/2020/06/22/the-great-pause-was-an-economic-revolution%E2%80%A8/> (accessed 20 August 2020).
- Mann CC (2020) Pandemics leave us forever altered. *The Atlantic*. 1 June. Available at: <https://www.theatlantic.com/magazine/archive/2020/06/pandemicsplagues-history/610558/> (accessed 20 August 2020).
- Masco J (2017) The crisis in crisis. *Current Anthropology* 58(S15): S65–S76.
- Morgan R (2021) “Please explain”: Tennis world stunned by “surreal” Aussie crowd images. Yahoo!sport. 28 January. Available at: <https://au.sports.yahoo.com/australian-open-world-stunned-surreal-crowd-images-043952995.html> (accessed 15 March 2021).
- Munn ND (1992) The cultural anthropology of time: A critical essay. *Annual Review of Anthropology* 21: 93–123.
- Myers T (2001) Modernity, postmodernity, and the future perfect. *New Literary History* 32(1): 33–45.

- Nadasdy P (2007) The gift in the animal: The ontology of hunting and human–animal sociality. *American Ethnologist* 34(1): 25–43.
- Nordblad J (2021a) On the difference between anthropocene and climate change temporalities. *Critical Inquiry* 47(2): 328–348.
- Nordblad J (2021b) Concepts of future generations: Four contemporary examples. In: Kemp S and Andersson J (eds) *Futures*. Oxford Handbooks Online. Available at: <https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780198806820.001.0001/oxfordhb-9780198806820-e-22?rskey=cr9HDF&result=1> (accessed 20 March 2021).
- Oliver-Smith A (1986) *The Martyred City: Death and Rebirth in the Andes*. Santa Fe, NM: University of New Mexico Press.
- Olma N (2020) Looking into the past, living in the future. *Social Anthropology* 28(2): 332–333.
- Pedersen MA and Nielson M (2013) Trans-temporal hinges: Reflections on a comparative ethnographic study of Chinese infrastructural projects in Mozambique and Mongolia. *Social Analysis* 57(1): 122–142.
- Pels P (2015) Modern times: Seven steps toward an anthropology of the future. *Current Anthropology* 56(6): 779–796.
- Peutz N (2021) Crisis as preexisting condition: Yemen between cholera, coronavirus, and starvation. In: Fassin D and Fourcade M (eds) *Pandemic Exposures: Economy and Society in the Time of Coronavirus*. Chicago: Hau, pp.295–320.
- Polanyi K (1944) *The Great Transformation*. New York: Farrar & Rinehart.
- Povinelli EA (2011) *Economies of Abandonment: Social Belonging and Endurance in Late Liberalism*. Durham: Duke University Press.
- Rajak D (2020) Waiting for a deus ex machina: “Sustainable extractives” in a 2°C world. *Critique of Anthropology* 40(4): 471–489.
- Rajković I (2020) Mutating states. *Social Anthropology* 28(2): 337–339.
- Rayner S (2016) What might Evans-Pritchard have made of two degrees? *Anthropology Today* 34(4): 1–2.
- Reed D (2002) Resource extraction industries in developing countries. *Journal of Business Ethics* 39: 199–226.
- Roitman J (2014) *Anti-crisis*. Durham: Duke University Press.
- Rosenberg D and Harding S (2005) Introduction: Histories of the future. In: Rosenberg D and Harding S (eds) *Histories of the Future*. Durham: Duke University Press, pp.3–18.
- Schutz A (1972) Common-sense and scientific interpretation of human action. In: Schutz A (au), Natanson MA and van Breda HL (eds) *Collected Papers I, The Problem of Social Reality*. Heidelberg: Springer Netherlands, pp.3–47.
- Scott J (1999) *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press.
- Serdeczny O, Waters E and Chan S (2016) *Non-economic Loss and Damage in the Context of Climate Change: Understanding the Challenges*. Bonn: Deutsches Institut für Entwicklungspolitik (DIE).
- Supran G and Oreskes N (2017) Assessing ExxonMobil’s climate change communications (1977–2014). *Environmental Research Letters* 12: 8. Available at: <http://iopscience.iop.org/1748-9326/12/8/084019> (accessed 15 March 2020).
- Swyngedouw E (2010) Apocalypse forever? Post-political populism and the spectre of climate change. *Theory, Culture & Society* 27(2–3): 213–232.
- Tambiah SJ (1979) *A Performative Approach to Ritual*. London: Oxford University Press.
- Turner V (1974) *Dramas, Fields, and Metaphors: Symbolic Action in Human Society*. Ithaca: Cornell University Press.

- UNFCCC (United Nations Framework Convention on Climate Change) (2015) Paris Agreement. Available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf.
- UNFCCC (United Nations Framework Convention on Climate Change) (2022) Climate Change 2022: Impacts, Adaption, and Vulnerability. (The Sixth Assessment Report of the IPCC). Available at: <https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/> (accessed 20 March 2022).
- Visacovsky SE (2017) When time freezes: Socio-anthropological research on social crises. *Iberoamericana Nordic Journal of Latin American and Caribbean Studies* 46(1): 6–16.
- Wall A (2016) Philosophy as mental engineering. Review of *Portraits of Wittgenstein*. (Flowers FA and Ground I (eds), Bloomsbury, 2016). *Fortnightly Review*. 7 September. Available at: <https://fortnightlyreview.co.uk/2016/09/wittgenstein/> (accessed 15 March 2021).
- Wallman S (1992) Introduction: Contemporary futures. In: Wallman S (ed) *Contemporary Futures: Perspectives from Social Anthropology*. London: Routledge, pp.1–20.
- Weick KE (1979) *The Social Psychology of Organizing*, Second Edition. New York: McGraw-Hill.
- Weisser F and Müller-Mahn D (2017) No place for the political: Micro-geographies of the Paris climate conference 2015. *Antipode* 49(3): 802–820.
- Wilks R (2007) It's about time: A commentary on Guyer. *American Ethnologist* 34(3): 440–443.
- Worster D (2020) Another silent spring. In: *Environment & Society Portal, Virtual Exhibitions 1* (22 April 2020). Rachel Carson Center for Environment and Society. DOI: 10.5282/rcc/9028. Available at: https://www.environmentandsociety.org/sites/default/files/dworster_another_silent_spring.pdf (accessed 15 August 2020).

Stuart Kirsch is Professor of Anthropology at the University of Michigan. His current research focuses on the transition to a post-carbon future. He is the author of *Reverse Anthropology* (Stanford University Press, 2006), *Mining Capitalism* (University of California Press, 2014), and *Engaged Anthropology* (University of California Press, 2018).