

Introduction

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The two of us writing this introduction belong to different human generations. One of us is a (late) boomer with Gen Z children; the other is an (early) millennial with no intentions of adding another human being to this planet we call ‘Earth’ for “[e]very new life is a tragedy in waiting”, as the extreme metal band Cattle Decapitation puts it on their Anthropocene album *Death Atlas* (2019). Estimates suggest that at the dawn of the Industrial Revolution, 700 to 800 million people inhabited the planet (Thomlinson 1975, 44; United Nations 1999, 6), and the concentration of carbon dioxide in the atmosphere may have been as low as 260ppm (Wigley 1983). When the more senior one of us was born, three billion people lived on Earth (Livi-Bacci 2017, 25), and atmospheric carbon dioxide was below 320ppm (Sundquist, Keeling 2009, 28). About twenty years later, when the second one of us was born, the world population had increased to 4.5 billion (Livi-Bacci 2017, 25), and carbon dioxide concentration had risen to 340ppm (Sundquist, Keeling 2009, 28). According to the United Nations (2022), the human population on Earth surpassed eight billion on 15 November 2022 (the U.S. Census Bureau estimates that this threshold was only crossed on 26 September 2023 [Morse 2023]). On 28 April 2023, Mauna Loa Observatory momentarily recorded 425.01ppm (Lazurko, Raymond 2023), the highest CO₂ concentration since the Pliocene, when global temperatures were about three degrees higher than today (Martínez-Botí et al. 2015) and the sea level at least fifteen metres higher (Hashimoto 2019, 7). In one of our lifetimes, the world population has increased by more than 2.6 times, in



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the other case still by more than 75%, while CO₂ concentration has increased by about 32 and 25%, respectively.

We do not mean to suggest an overly simplistic connection between the number of human beings populating the planet and the environmental crisis (even if there seems to be a nearly linear correlation between atmospheric carbon dioxide and the world population since 1960 [Hofmann, Butler, Tans 2009, 2086]), nor do we mean to support or condone the ethically as well as morally dubious notion that the number of humans on the planet should be reduced (even if “[p]opulation is often the elephant in the room in discussions of climate change”, as Dipesh Chakrabarty has pointed out [2015, 50]), nor do we mean to construct a homogenous ‘human’ equally culpable for, and vulnerable to, the environmental crisis in our opening paragraph; nevertheless, the concentration of carbon dioxide in the atmosphere and the growing world population are two metrics that illustrate the anthropogenic impact on the Earth system. Human overpopulation emerged as a genuine anxiety in the 1950s, albeit dating back to Thomas Malthus’s *An Essay on the Principle of Population* (1798) (cf. Clark 2016; Charise 2020). As early as 1957, Murray Luck expected that by 2050, nine billion humans would populate the planet.¹ In his opinion, when imagining such a number (at a time when there were about three billion people on the planet), “the most pertinent question is whether or not the world of 2050 will be able to raise enough food” (1957, 904). He concluded that it would “although the present inequalities in distribution will be accentuated” (904). Luck feared that the competition for resources among nations would require governments to “become more and more pervasive, and more and more domineering”, meaning that “the precious freedoms of the individual will diminish” (906). He thus wondered, “Will it be worth while [sic] for our children and grandchildren against such terrific odds and against so grim a future?” (906).

Luck deploys the image of children and grandchildren for a reason: the child’s “innocence solicits our defense” (Edelman 2004, 2). How can you oppose the protection of *our* children, after all? Adeline Johns-Putra has identified this type of “parental rhetoric of posterity” as “one of the most prevalent tactics in contemporary environmentalist discourse” (2019, 4). Yet, as much as safeguarding our children’s future may evoke automatic, unhesitating, and unquestioning support among most people, this imaginary (but also materially real) child is an ambiguous figure. Rebekah Sheldon has explained that the child’s innocence, which “is worth protecting cannot be preserved

1 The United Nations expects the world population to reach nine billion by 2037 (Zeifman et al. 2022). Some estimates suggest that the world population may peak before hitting that mark (Callegari, Stoknes 2023; Dixson-Declève et al. 2022).

indefinitely, and so the child's relationship is defined, in part, by a melancholic anticipation of loss". The child's "rescue from harm", she continues, "appears tantamount to the future safety of us all – a future that is in any case already irremediably harmed" (2016, 4). Indeed, the environmental crisis has, as Jennifer Wenzel has observed, "destabilize[d] the straightforward, secular assumption that pasts and presents have futures, that things just keep going, that time and history keep unfolding" (Craps et al. 2018, 502). The children's future cannot be taken for granted any more; at the same time, the children of the future may look very different from the children of today.

Nevertheless, the child embodies the future in the popular imagination. Older generations, on the other hand, figure as the destroyers of the future. "Young people are being let down by older generations and those in power", none other than Greta Thunberg claimed in an op-ed piece for *The Guardian* a few days before the World Economic Forum's 2020 meeting in Davos. The "aging population threatens the non-old", Margaret Cruikshank compresses a pervasive cultural myth of the twenty-first century (2013, 25). She continues to explain that the elderly tend to be associated with "disaster metaphors" such as "flood[s]", "avalanche[s]", "tsunamis", and "icebergs" (26-7), suggesting that the older generations are the reckless, voracious, and insatiable architects of the impending (or ongoing) catastrophe that they will not (or barely) experience. Indeed, contemporary society is characterised by

a deep sense of unfairness across generations, grudging allocation of welfare for 'guilty' seniors, and a bitter sense of having to clean up someone else's mess [...] positions older people as a destructive force that threatens the integrity of the planet as a whole. (Jewusiak 2023, 159)

Of course, the discursive construction of 'the young vs the old' imagines homogenous groups that do not reflect how the inclusive gesture of faulting 'humanity' for the environmental crisis erases differences across history and geography (alongside various markers of social identity). While it is true that the stereotype of the elderly "as being incapable of engagement, or as passive or disinterested" concerning environmental issues "needs to be acknowledged [...] and overcome" (Haq 2021, 125), Americans' energy consumption dramatically increases between the ages of thirty and fifty-five and increases disproportionately once again after the age of seventy (Estiri, Zagheni 2019). In France, "baby boomers emit 20% more CO₂ than the average household" (Chancel 2014, 200); a study in China has shown that with increasing age, carbon emissions rise (Fan et al. 2021); and Italians born between 1940 and 1974 have the highest private transport fuel consumption (Bardazzi, Paziienza 2018).

No matter which age cohort might be to blame, we continue pumping greenhouse gases into the atmosphere. Their effects on the global climate are not a recent insight, with Svante Arrhenius (1896) noting the connection between carbon concentration and temperature more than a hundred years ago. Fast-forward to the year in which Murray Luck imagined that nine billion people would inhabit the planet, and Roger Revelle and Hans Suess warned that humans were “carrying out a large[-]scale geophysical experiment” by “returning to the atmosphere and oceans the concentrated organic carbon stored in sedimentary rocks over hundreds of millions of years” (1957, 19). The production of CO₂ due to fossil fuel consumption, James Arnold and Ernest Anderson concluded in the same journal issue, had

reached truly geochemical proportions and the rate of introduction of ‘new’ [...] carbon into the exchange reservoir by fuel consumption seems to exceed the natural production rate of juvenile carbon by two orders of magnitude. (30)

Rachel Carson’s iconic book *Silent Spring* appeared five years later. It announced that “[f]or the first time in the history of the world, every human being is now subjected to contact with dangerous chemicals, from the moment of conception until death” ([1962] 2002, 15). To be sure, Carson focused on the effects of pesticides on the human and nonhuman world, but the publication of *Silent Spring* was “an epochal event in the history of environmentalism” and “launch[ed] a new decade of rebellion and protest in which the idea of Nature under stress also began to be seen as a question of the quality of life” (Gottlieb 2005, 121). Writing amid the nuclear anxieties produced by the Cold War, Carson told a *Washington Post* reporter a few months before the publication of *Silent Spring* that she would not “equate the nuclear fallout hazard with that of poisonous insecticides, but [...] they are interrelated, combining to render our environment progressively less fit to live in” (quoted in Eiseley 1962, 18). By thus entangling early signs of the environmental crisis with the zeitgeist of the Atomic Age (whose artificial residue materially inscribes anthropogenic activities into the planet’s layers and thus provides one key marker for the Anthropocene [Zalasiewicz et al. 2015]), Carson made clear that the “mission of *Silent Spring*” was “nothing less than an attempt to create a new environmental consciousness” (Gottlieb 2005, 125).² In 1965, the U.S. President’s Science Advisory

² As Ursula Heise has rightly pointed out (2016, 6-7), there have been different ecological crises that range from the local to the global, from the near-extinction of the American bison in the United States in the latter stages of the nineteenth century to the global concern about anthropogenic climate change today. However, these crises are all interrelated.

Committee Environmental Pollution Panel estimated that CO₂ concentration in the atmosphere in the year 2000 would be 25% higher than in 1950, which, they concluded, “may be sufficient to produce measurable and perhaps marked changes in climate” (quoted in Peterson 1969, 1164). By the end of the 1960s, Democratic Senator Gaylord Nelson (who was also the chairman of the first Earth Day) would declare the environmental crisis “the most critical issue facing mankind” because “nuclear war, hunger, decaying cities, and all other major problems one could name” pale in comparison with the gravity and long-term effects of this particular problem (quoted in Dowie 1995, 25).

In his book *The Long Thaw*, computational ocean chemist David Archer explains that humanity

has a kind of vested interest in time spans of centuries. I personally can visualize centuries. [...] I know people who knew people who knew the beginning of the last century. [...] Looking forward, a century is about how far I can really imagine also. Sixty years is grandchildren. One hundred is great grandchildren or great, great grandchildren. (2009, 5)

In this passage, Archer points at the difficulty, if not impossibility, of imagining timescales that stretch beyond three or four, perhaps five, human generations – which Kathleen Woodward (2020) has called ‘generational time’. We may be able to imagine future humans that we may still be in contact with, but “[g]lobal warming and many other human-driven changes to the environment are raising concerns about the future of Earth’s environment and its ability to provide the services required to maintain viable human civilizations”, Will Steffen, Paul Crutzen, and John McNeill have stressed (2007, 614). They continue to explain that “future generations of *H. sapiens* will likely do all they can to prevent a new ice-age by adding powerful artificial greenhouse gases to the atmosphere” (620; italics in the original).

At the same time, both the passage quoted from Archer’s book and the article co-authored by Steffen, Crutzen, and McNeill emphasise the human dimension of the environmental crisis; their anthropocentrism imitates how (if not perpetuates the idea that) human lifetimes and human (world) history overshadow aspects of geological time in discussions of the environmental crisis. This single-minded focus on human time helps explain and understand the predicament that humankind, in its role as “the dominant ecological force on the planet” (Ellis 2011, 38), has manoeuvred the planet into; however, “if we do not take into account Earth-history processes that outscale our very human sense of time, we do not quite see the depth of the predicament that confronts humans today”, Dipesh Chakrabarty has warned (2018, 6).

Unfortunately, “[p]eople can’t get their minds around the time spans involved”, resulting in “a hot topic” that nevertheless “lacks urgency”, the narrator in Margaret Drabble’s novel *The Dark Flood Rises* remarks (2016, 299). Indeed, the “derangements of scale” (Clark 2012) characteristic of the Anthropocene have made the world “un-thinkable”, as the subtitle of Amitav Ghosh’s *The Great Derangement* (2016) suggests (see also Thacker 2011, 1). Characterised by hyperobjects “that are massively distributed in time and space relative to humans” (Morton 2013, 1), the world today eludes human comprehension (or, perhaps more to the point, these hyperobjects make us acknowledge that understanding the world has always been an illusion). Adam Trexler considers these complications fertile soil for literary innovation, as the environmental crisis requires literature (and other media) to integrate “new things into preexisting genres”. “Climate change”, he continues, “changes the literary potentialities of setting, conflict, the organisation of characters, and the fundamental way that diverse characters and nonhumans interact in narratives” (2015, 234).

The five contributions to this issue discuss how film, comics, video games, and literature approach various issues and phenomena of intergenerational significance in the face of looming environmental catastrophe. In the opening article, Teresa Botelho focuses on indigenous literatures – more specifically, Alexis Wright’s *The Swan Book* (2013) and Cherie Dimaline’s *The Marrow Thieves* ([2017] 2019) – and how these narratives figure older generations not so much as adversaries burdened with guilt but rather as carriers of memory, thereby contributing to the larger project of spotlighting the “memories, knowledges, histories, and experiences of oppression that differ from many of the nonindigenous scientists, environmentalists, and politicians who are prominent in the framing of the issue of climate change today” (Whyte 2017, 153). *The Swan Book*, Botelho demonstrates, addresses issues of indigenous dispossession and climate change refugees in complex ways, while *The Marrow Thieves* tackles questions of living in a climate-changed world. Both novels, Botelho suggests, present alternatives to the Western concepts of time and experience, as intergenerational allyship and interspecies kinship become key to reconfiguring the human place on an increasingly inhospitable planet.

Nadine Böhm-Schnittker continues along a similar path and examines the different scales that become significant in Mahasweta Devi’s story “Pterodactyl, Puran Sahay, and Pirtha” (1989) as well as Amitav Ghosh’s novels *The Hungry Tide* (2004) and *Gun Island* (2019), focusing, in particular, on the interplay between generational time and deep time and the significance of non-Western systems of knowledge. In “Pterodactyl”, the appearance of the titular prehistoric animal in the 1980s effects a clash between the temporal scales of deep time and human time that seems to be beyond expression and comprehension but simultaneously spotlights the Earth-destroying progress of

modernity. *The Hungry Tide* and its sequel, on the other hand, not only entangle animal migrations with anthropogenic activities and present-day events with the geologic history of the Indian subcontinent (among others) but also try to express that which has long been silenced. In the end, Böhm-Schnittker highlights multiscalarity as one way in which the novel has responded to the representational challenges of the environmental crisis.

Carolyn Becklas and Sabine Baumann turn their attention to the video game *Eco* (Strange Loop Games 2018) and how it communicates the realities of climate change. They thus engage with the question of whether and how “playful simulations can take as their subject processes as large and protracted as climate change” (op de Beke 2021, 186). *Eco* is a survival game that may be played by one player or as an online multiplayer game - with the latter being the option suggested by the game’s creators, as it requires players to collaborate with other players to evolve as a civilisation. Alternating between different points of view that, quite literally, give players different perspectives to experience the different scales involved in comprehending the interplays between local activities and global phenomena and simulating various factors that impact the environment, *Eco*, Baumann and Becklas suggest, communicates the complexity of climate change effectively despite simplifying the climate system.

In “*Don’t Look Up* Climate Change: Dooming Boomers, Nihilistic Teenagers and Underfunded Scientists Against/For the World”, Georg Gruber explores the star-studded film *Don’t Look Up* (2021). The movie, Gruber suggests, simplifies the *longue durée* of global warming by transforming it into the momentary impact of a giant comet on Earth, which causes a mass extinction event. At the same time, as Gruber shows, *Don’t Look Up* paints a complex picture of the U.S.-American mediascape that is more interested in viewership numbers than reporting the reality of an impending extinction-level event. The storyworld of *Don’t Look Up* is populated by caricatures of greedy tech billionaires, power-hungry politicians and their incapable staff, scientists unable to communicate with the masses, disaffected youth, and entertainers engaging in their form of what Naomi Klein called disaster capitalism (2007). They combine to represent various ways of (not) responding to a crisis that threatens to annihilate life on Earth. As Gruber argues, *Don’t Look Up* may be a flawed movie; however, it grapples with the complexities of communicating the realities of global warming, the intricacies of a mediascape in which too many actors are vying for audience attention, and the problems of national political systems ill-equipped for confronting an issue of global scale.

Finally, Michael Fuchs and Anna Marta Marini’s contribution, “The Slow Apocalypse in *The Low, Low Woods*”, draws on Rob Nixon’s notion of ‘slow violence’ (2011) to discuss the limited horror comics series *The Low, Low Woods* (2020), written by Carmen Maria Machado

with art by Dani and colour by Tamra Bonvillain. Nixon conceptualises ‘slow violence’ as a transgenerational, transnational, and transspecies issue, for it is a type of “violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all” (2011, 2). Fuchs and Marini place these concerns squarely on the Appalachian coal-mining industry and its long-term effects on people and the natural world, which *The Low, Low Woods* interweaves through strategies characteristic of the comics medium. In particular, the comics series demonstrates how the extractive industries capitalise on the notion of “cheap nature” (Moore 2015) to exploit the environment and (marginalised) human populations. Indeed, Fuchs and Marini highlight that the comics series entangles its critique of capitalism with a decided focus on the violence enacted to establish and maintain the dominance of (white) patriarchy in the region and beyond. However, they conclude on a cautionary note, as the comic’s anthropocentrism exaggerates human agency on a warming planet.

In combination, the five articles included in this issue showcase various intergenerational issues and phenomena at play in the environmental crisis. To be sure, the ecological dilemma that we find ourselves in is “the product of a social rift: the domination of human being by a human being. The driving force is a society based on class, inequality, and acquisition without end” (Foster, Clark, York 2010, 27). However, as Dipesh Chakrabarty has stressed, this is only part of the story: “It is, ironically, thanks to the poor [...] that we do not put out even larger quantities of greenhouse gases into the biosphere than we actually do” (2015, 49). This ambiguity speaks to the ‘super-wicked’ character of the environmental crisis (Lazarus 2009), which is

less a matter of unitary or even discernibly plural causes, and more the emergent effect of the combination of numerous interacting issues of a hybrid kind, comprising capitalism, population pressure, [...] deforestation, neo-colonialism, and cultural norms (such as those of patriarchy), along with such capricious material factors [...] as levels of methane from thawing ground in Siberia, soil degradation, the varying reflectivity of clouds... (Clark 2016, 7)

Roy Scranton has suggested that, in order to live and continue living on this human-altered planet, “we must first learn how to die” (2015, 28). “Learning to die as an individual”, he explains, “means letting go of our predispositions and fear”. “Learning to die as a civilization”, on the other hand, “means letting go of this particular way of life and its ideas of identity, freedom, success, and progress” (24). On the one hand, this means abandoning fossil fuels and the system of petrocapi-talism, which have driven large parts of the world; on the other hand, it means overcoming the differences and differentiations

between human groups (including generations). As if responding to Scranton, sociologist Giacomo Bazzani has promoted “low-carbon behaviors” as “a form of global and intergenerational pro-social behavior” (2023, 353). Such practice would allow us to connect “individual, fragile bodies” to a collective “project of staying home and [...] *making* home of a broken world” (LeMenager 2017, 225-6; italics in the original). One might be tempted to argue that this idea of inhabiting a broken world imitates, in particular, experiences indigenous peoples have been making since they encountered the power of ‘civilisation’, turning us white Euro-American scholars into the ‘dreamless ones’ of Cherie Dimaline’s *The Marrow Thieves*, recycling ideas that others had long before us. Be that as it may, we would like to echo Stephanie LeMenager’s notion (and countless others who have voiced similar ideas) that capitalism’s project of slowly cancelling the future (to draw on Franco Berardi [2013]) may produce an inhospitable planet. Still, there is hope for survival on this warming planet.

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