



Science Fiction and the Risks of the Anthropocene: Anticipated Transformations in Dale Pendell's *The Great Bay*

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ABSTRACT Covering the time span from 2021 to 16000 N.C., Dale Pendell's speculative novel *The Great Bay* chronicles the profound climatic, geological and ecological transformations that California undergoes during these fourteen millennia. Human life becomes unimaginably small on such a time scale, and Pendell responds to that representational challenge by compiling a wide variety of texts that zero in on individual humans at different points in the future rather than offering a continuous story or central character. In a way, that place is taken by the geographical region that is the focus of the narrative and gives the book its title. Timothy Morton has argued that because we live in the Anthropocene we can no longer understand history as exclusively human. Pendell's "Chronicle of the Collapse" suggests that the same is true for storytelling, offering readers the story of a nonhuman protagonist that changes slowly over time. The result is a highly fragmented narrative that is interesting for what it tries to achieve but at the same time remarkably unengaging. In its distant and distanced rendering of future ecological change and human anguish, *The Great Bay* is a grave reminder not only of the incalculable risks of the Anthropocene, but also of the basic tenets of realist storytelling.

Dale Pendell's *The Great Bay: Chronicles of the Collapse* (2010) opens with a table of contents that is accompanied by three illustrations showing the physical features of California.¹ The first illustration is dominated by the long flat plain of the San Joaquin Valley. San Francisco Bay to the west of it is also clearly visible, and although the city of San Francisco isn't shown or mentioned (though East Palo Alto is), it is an easily recognizable representation of California. The second map looks much less familiar. This is because the waters of San Francisco Bay now extend far into the San Joaquin Valley, a process that seems to have continued in the third illustration, which shows the Valley nearly filled by seawater and a significantly shrunken shoreline along the Pacific Coast. All the big coastal cities are now gone—in fact there are no longer any cities noted at all. Looking at the table of contents, we realize that this illustration accompanies the overview of the final five chapters of the book, covering the future history of California from 2521 to a final document about the "Caribou Hunters on Pit River" fourteen

¹ Dale Pendell, *The Great Bay: Chronicles of the Collapse* (Berkeley, CA: North Atlantic Books, 2010).

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thousand years “after the Collapse.”² That Collapse, we learn in the first chapter, happened in the year 2021, and while it marked the end of the “Oil Culture,”³ it did not terminate the long-term climatic and geological effects of human activity on planet Earth. The comprehensive transformations of the epoch that some have come to call the Anthropocene will continue for millennia, and Pendell’s ambitious science fiction novel attempts nothing less than to imagine not only the geological but also the human dimensions of this future development.

As an informal scientific term, the Anthropocene denotes a geological epoch that follows the Holocene, an epoch that is marked by a new scale of human activity and agency. Those who are interested in the social and cultural dimensions of the Anthropocene tend to look not only at its present challenges but also at its potential future dimensions and the consequences for ecosystems and humans alike. They frequently frame their concerns in terms of uncertainty, pointing out that “our collective actions have brought us into uncharted territory” and that “there’s a risk of an irreversible cascade of changes leading us into a future that’s profoundly different from anything we’ve faced before.”⁴ Like the German sociologist Ulrich Beck, they assume that living in an epoch that is shaped by human activities means being confronted with environmental risks and hazards that are the unintended consequences of those activities. Beck has theorized the societal dimensions of this dilemma in his work on the *world risk society*, a concept that “draws attention to the limited controllability of the dangers we have created for ourselves.”⁵ Beck has argued that it is not only up to philosophy and science to explore the risk societies of the Anthropocene, but that novelists, too, do important work in exploring the “two faces of risk—chance and danger”⁶ in their imaginative accounts,⁷ and no genre would be better suited for such fictional explorations than science fiction.

As a speculative mode of narration, science fiction imagines possible alternative and future worlds that can be either utopian or dystopian in nature. It is “a fictive practice” that, in the words of Tom Moylan, “has the formal potential to re-envision the world in ways that generate pleasurable, probing, and potentially subversive responses in its readers.”⁸ Not least because of their investment in the building of alternative worlds, a good number of science fiction writers have concerned themselves with environmental issues. As Ursula Heise has pointed out, “science fiction is one of the genres that have most persistently and most daringly engaged environmental questions and their challenge to our vision of the future.”⁹ Pendell’s *The Great Bay* is an interesting example in this regard because of its ambitious temporal scope. Covering the time span from 2021 to 16000 N.C. allows Pendell to chronicle the profound

² Pendell, *The Great Bay*, 269.

³ *Ibid.*, 39.

⁴ *Welcome to the Anthropocene*, “Anthropocene,” accessed 3 January 2014, <http://www.anthropocene.info/en/anthropocene>.

⁵ Ulrich Beck, *World Risk Society* (Cambridge, UK: Polity Press, 1999), 6.

⁶ *Ibid.*, 5.

⁷ Beck’s examples include Cervantes’s *Don Quixote*, in which “in God’s absence, risk unfolds its fateful and terrible, inscrutable ambiguity.” Ulrich Beck, *World at Risk* (Cambridge, UK: Polity Press, 2007), 5.

⁸ Tom Moylan, *Scraps of the Untainted Sky: Science Fiction, Utopia, Dystopia* (Boulder, CO: Westview Press, 2000), 4.

⁹ Ursula K. Heise, “Letter,” *PMLA* 114, no. 5 (1999): 1097.

climatic, geological and ecological transformations that California undergoes during these fourteen millennia. Human life becomes almost unimaginably small on such a time scale, and *The Great Bay*—despite its explicit indexation as a *novel* on the cover of the book—addresses this problem by presenting readers with a wide variety of texts that offer panoptic views of the future state of the world and briefly zero in on individual human lives rather than a continuous narrative or central character. In a way, that place is taken by the geographical region that is the focus of the narrative, and so it is probably not by coincidence that it is this nonhuman protagonist—the “Great Bay,” as the future extension of the San Francisco Bay into the San Joaquin Valley is called—that gives the book its title.

“[W]e are no longer able to think history as exclusively human,” writes Timothy Morton in *Hyperobjects* (2013), “for the very reason that we live in the Anthropocene.”¹⁰ Pendell’s novel suggests that the same is true for storytelling: The protagonists of narratives can no longer be exclusively human in an age of rapid climatic and geological transformations that are the result of human activity and at the same time determine the activity of future humans. In a way the book is therefore a response to Heise’s complaint, in *Sense of Place and Sense of Planet* (2008), that most climate change novels are too “conventional in their narrative strategies,”¹¹ frequently falling back “on apocalyptic narrative” and simplistic story lines that concentrate on the lives of generic science fiction protagonists.¹² Heise calls for stylistic and formal innovation while also suggesting that the Modernist tradition of narrative collage offers possibilities for capturing the vast dimensions of global ecological transformations.¹³ Pendell’s *The Great Bay* certainly attempts such an innovative mode of narration as it tells its story about the year of the Collapse and the fourteen millennia that follow it, and it also relies heavily on methods of collage and fragmentation. The result, however, is a narrative that is interesting for what it tries to achieve but at the same time remarkably unengaging. Favoring geological and climatic timescales over human ones runs the risk of losing readers’ empathetic engagement with characters they understand well enough to care about their hopes and goals. In its distant rendering of future ecological change and human anguish, *The Great Bay* is therefore a grave reminder not only of the incalculable risks of the Anthropocene but also of the basic tenets of realist storytelling.

Envisioning the Risks of the Anthropocene

“Risk,” explains Ulrich Beck in his *World at Risk* (2007), “is *not* synonymous with catastrophe. Risk means the *anticipation* of the catastrophe. Risks concern the possibility of future occurrences and developments; they make present a state of the world that does not (yet) exist.”¹⁴ This differentiation between risk and catastrophe is important because it underlines the uncertainty and future-oriented temporality of risk. “Risks are always future events that *may* occur, that *threaten* us,” writes Beck, but despite this inherent futurity, they have considerable

¹⁰ Timothy Morton, *Hyperobjects: Philosophy and Ecology after the End of the World* (Minneapolis: University of Minnesota Press, 2013), 2.

¹¹ Ursula K. Heise, *Sense of Place and Sense of Planet: The Environmental Imagination of the Global* (New York: Oxford University Press, 2008), 207.

¹² *Ibid.*, 206.

¹³ See *Ibid.*, 76-77.

¹⁴ Beck, *World at Risk*, 9.

effects on our present, “because this constant danger shapes our expectations, lodges in our heads and guides our actions, it becomes a political force that transforms the world.”¹⁵ The risks of the Anthropocene are therefore potential *future* hazards and catastrophes that have not yet materialized and some of which in fact may never materialize. Nevertheless, the awareness of these risks shapes our expectations and, potentially, our actions. As is usually the case with risks, this awareness takes its starting point in the observation of past and present occurrences, combined with a projection of their potential future developments. The *Welcome to the Anthropocene* website offers one of many descriptions of the status quo:

Probably the best-known aspect of our newfound influence is what we’re doing to the climate. Atmospheric carbon dioxide may be at its highest level in 15 million years. But this is just one part of the story; we’re changing the planet in countless ways. Nutrients from fertilizer wash off fields and down rivers, creating stretches of sea where nothing grows except vast algal blooms; deforestation means vast quantities of soil are being eroded and swept away. Rich grasslands are turning to desert; ancient ice formations are melting away; species everywhere are vanishing.¹⁶

Climate change here emerges as only one of many ways in which humans interfere with the Earth’s biosphere, but it will likely be the interference that has the most lasting effects. Over the past decade countless popular science books have tried to warn their readers about the risks involved in this interference, basing their projections on the findings of peer-reviewed scientific articles and their own research.

NASA-climatologist James Hansen, for example, writes in *Storms of My Grandchildren* (2009) that “continued exploitation of all fossil fuels on Earth threatens not only the other millions of species on the planet but also the survival of humanity itself—and the timetable is shorter than we thought.”¹⁷ The subtitle of Hansen’s book, *The Truth about the Coming Climate Catastrophe and Our Last Chance to Save Humanity*, also clearly invokes a sense of risk in the way Beck has described it, speaking about the *coming* climate catastrophe as well as about a *last chance* to save ourselves. There is a sense of urgency and potential doom in these words, and while it may have been the publisher’s decision to feature them so prominently on the cover, they adequately represent the apocalyptic tone¹⁸ of Hansen’s deliberations. “Planet Earth,” he writes, “is in imminent peril”¹⁹ because of human activity, which is why “it is crucial for all of us ... to get involved.”²⁰ Bill McKibben’s *Eaarth* (2009) strikes a similar tone, but doesn’t tell its readers, as does Hansen’s book, that humanity still has a “last chance” to avoid

¹⁵ Beck, *World at Risk*, 9-10.

¹⁶ *Welcome to the Anthropocene*, “Anthropocene.”

¹⁷ James Hansen, *Storms of My Grandchildren: The Truth about the Coming Climate Catastrophe and Our Last Chance to Save Humanity* (London: Bloomsbury, 2009), ix.

¹⁸ For a detailed analysis of the use of apocalyptic modes of narration in the environmentalist discourse and fiction, see Chapter 5 of Greg Garrard’s *Ecocriticism* (London and New York: Routledge, 2012). See also the Introduction of Eric Otto’s *Green Speculations: Science Fiction and Transformative Environmentalism* (Columbus: Ohio State University Press, 2012).

¹⁹ Hansen, *Storms*, xi.

²⁰ *Ibid.*, 277.

the worst. In McKibben's view, planet Earth is already "a different place" than it was for the past ten thousand years, which is why it "needs a new name: Eearth."²¹ Rather than offering an apocalyptic perspective, in which, as Heise points out, "utter destruction lies ahead but can be averted,"²² McKibben presents a risk scenario in which "crises are already underway all around and while their consequences can be mitigated, a future without their impact has become impossible to envision."²³ The environment on his planet Eearth is what Frederic Buell has described as "a horror people hopelessly dwell within, a horror that goes on and on all around them."²⁴ But even as he insists that "global warming is ... no longer a future threat, *no longer a threat at all*. It is our reality,"²⁵ McKibben still tries to alert his readers to the even greater dangers in the future, so that they can adapt to the changing climate and build "communities and economies that can withstand what's coming."²⁶ James Lovelock sounds even more alarmed in *The Revenge of Gaia* (2007), where he speaks about his concern about "the Earth's declining health," urging his readers to do something about anthropogenic climate change because "the living Earth's response to what we do will depend not merely on the extent of our land use and pollutions but also on its current state of health."²⁷

These are just three examples of how the risks of the Anthropocene—particularly climate risk—have been used in popular science texts to engage readers emotionally in a narrative of environmental decline and scare them into taking action to prevent these risks from turning into actual hazards and catastrophes. It is perhaps unsurprising that in order to convey the severity of the risks, many of these texts describe potential future catastrophes *as if* they were no longer risks but already a reality. Peter Ward's *The Flooded Earth* (2010), for example, opens with a description of Miami in the year 2120 CE when carbon dioxide is at 800 ppm and the city an island "because the level of the world's ocean's had risen 10 feet."²⁸ Mark Lynas's *Six Degrees* (2007) takes considerable liberty in its detailed description of a world that is one to six degrees hotter than in the present.²⁹ The most daring attempt to make the potential

²¹ Bill McKibben, *Eearth: Making a Life on a Tough New Planet* (New York: St Martin's Griffin, 2010).

²² Heise, *Sense of Planet*, 142.

²³ *Ibid.*, 142.

²⁴ Frederick Buell, *From Apocalypse to Way of Life: Environmental Crisis in the American Century* (New York and London: Routledge, 2004), 251.

²⁵ McKibben, *Eearth*, xiii.

²⁶ *Ibid.*, xv.

²⁷ Lovelock famously has conceptualized the Earth as Gaia and therefore as a living super organism that "controls its temperature composition so as to always feel comfortable." This is also why, in his understanding, Gaia can take a callous form of "revenge." James Lovelock, *The Revenge of Gaia: Earth's Climate Crisis and the Fate of Humanity* (New York: Basic Books, 2007), 1-2.

²⁸ Peter Ward, *The Flooded Earth: Our Future In a World Without Ice Caps* (New York: Basic Books, 2010), 1.

²⁹ Based on the scientific literature on climate change, *Six Degrees* is organized into six chapters with each chapter describing the possible ecological (as well as social and political) impacts at a specific average temperature, starting with a rise of one degree and ending at a rise of six degrees Celsius. Lynas acknowledges that he "would be foolish to expect these predictions to come true in any literal sense" but he nevertheless asserts that "climate change is the canvas on which the history of the twenty-first century will be painted." Mark Lynas, *Six Degrees: Our Future on a Hotter Planet* (London: HarperCollins, 2007), xxii.

future catastrophes imaginable for readers, however, can be found in Hansen's book, which includes a science fiction story set in the year 2525 in which a humanoid alien species unsuccessfully tries to resettle its people to a planet Earth that now has surface temperatures of one hundred degrees Celsius and is devoid of life. While this scenario "may read like far-fetched science fiction," writes Hansen, "its central hypothesis is a tragic certainty—continued unfettered burning of all fossil fuels will cause the climate system to pass tipping points, such that we hand our children and grandchildren a dynamic situation that is out of control."³⁰ In order to illustrate the book's scientific hypothesis, then, Hansen turns to apocalyptic fiction in the hope that the shared imagination of future devastation will make his discourse of anthropogenic risk more convincing.

It remains to be seen whether the use of apocalyptic fictional elements in popular scientific discourse on the risks of the Anthropocene indeed makes such discourse more accessible and effective. In the case of Hansen's book the science fiction story is so far-fetched and the protagonists so bloodless that it seems unlikely that they will engage readers' imaginations and emotions in the intended way. Hansen is ready to admit that "science fiction isn't [his] area of expertise,"³¹ and so we might forgive him that, as a climatologist, he cannot create fictional characters or storylines that excite our minds. The question remains, however, what modes of narration *can* adequately imagine future worlds that continue to be shaped by the actions of humans who died decades, centuries, millennia ago. Pendell's *The Great Bay* constitutes one attempt to deal with the vast spatial and temporal dimensions of the issue within the realm of speculative fiction. Climate change figures prominently in the book, and it is what determines the often miserable lives of its future humans. But it is not the only anthropogenic transformation that Pendell chronicles, nor is it the sole reason for the initial collapse of human civilization. The book mentions multiple causes for the future catastrophes it envisions, and all of them have been counted among the potential risks of the Anthropocene.

Anticipating the Catastrophes of the Anthropocene: *The Great Bay*

The Great Bay offers two reasons for the Collapse it envisions for 2021 and the subsequent demise of mankind. The initial blow is a global pandemic, "a new kind of chicken pox, or smallpox"³² with absolutely devastating effects. However, we quickly learn that the seemingly natural disaster is actually anthropogenic in nature: "There was a rumor that the disease was an army bug, a genetically engineered biological weapon that had back-fired. ... The disease certainly spread with an engineered efficiency—two hundred million died in the United States in the first month."³³ The reason why the pandemic can spread so quickly and eradicate the larger part of the American population within only a few weeks is serious infrastructural problems that are related to the changing climate. We learn that "2021 had been the hottest summer on record, even topping 2020," with the result that "[t]he power grid had been stretched to the breaking point for weeks. The 'strategic oil reserves' had been depleted the

³⁰ Hansen, *Storms*, 269.

³¹ *Ibid.*, 260.

³² Pendell, *The Great Bay*, 2.

³³ *Ibid.*, 2.

year before.”³⁴ It is therefore anthropogenic climate change and resource depletion that, in *The Great Bay*, induce the disastrous failure of US infrastructure, and that in turn leaves the country unable to cope with the human-made virus that kills off its population. By October of the same year, the population of the United States is reduced to fifty million; one year later to fifteen million, and “by the spring of 2024 [it] was eight million and still declining.”³⁵

The Panoptic overviews that stand at the beginning of each of the twelve chapters offer “objective” information about the changing climate and its impact on California, the United States, and the rest of the world. They relate climatic, geological, and human processes alike, and they draw connections between previous human activities, resulting climatic and ecological transformations, and the latter’s effects on the humans of the future. The authorial narrator who speaks to us in these Panoptic introductions employ a decidedly detached and laconic tone in narrating the often horrific human suffering resulting from the unintended consequences of earlier human activities. “For a while,” we are informed, “they buried the bodies in mass graves with bulldozers.”³⁶ Later on, when electricity fails and corpses are simply placed outside in the streets, the sight becomes even more horrific: “Dogs ate at the corpses and some people shot at the dogs; others, in frustration, shot at the helicopters.”³⁷ And things only get worse as times goes by: “2022 and 2023 were the Hunger Years. People can endure near starvation for long periods of time while awaiting rescue or deliverance. But there were no deliverers, no rescuers—there were no relief expeditions. People starved, quietly, and died quietly. And, like any animal who starves to death, with the dignity of acceptance.”³⁸ Without the comforts and affordances of modern civilization, and in the absence of divine interference, humans die like the animals that they are. The narrator relates all this as simple facts, with the same equanimity that also characterizes his recounting of the infrastructural and societal breakdown and of the many failed attempts to save and rebuild, to scavenge and survive in a world that has been stretched beyond its breaking point.

One could easily argue that *The Great Bay* is a post-apocalyptic narrative. After all, it takes the near-complete collapse of human civilization as its starting point and then shows individual humans who try to survive in its aftermath, trying to make do with the limited resources and machinery available. However, the novel’s unusual time frame and the nature of the disaster complicate this classification. “[I]t is unlikely that an apocalypse will save us,” writes Pendell in the Afterword to his novel, “Much more likely is a gradual degradation of the quality of life, and, for many species, of their habitat and their chances for survival.”³⁹ These species, which clearly include the human species, are therefore forced to continually “dwell” in crisis, to use Frederick Buell’s term again. Accordingly, the global catastrophe in Pendell’s narrative is not so much an apocalypse as it is a fateful combination of several unintended consequences of scientific, technological, and societal risk taking and decision making. Pendell’s Collapse is the moment in which risks turn into hazards and, ultimately, into cata-

³⁴ Ibid., 1.

³⁵ Pendell, *The Great Bay*, 5-6.

³⁶ Ibid., 1.

³⁷ Ibid.

³⁸ Ibid., 5.

³⁹ Ibid., 271.

strophe. It was inevitable, we are told, “even without the Pandemic,”⁴⁰ because of the shortsightedness of human behavior and because humans took risks they shouldn’t have.

Similarly important is the fact that the global disaster doesn’t really provide a clean slate for a fresh start, as is often the case in post-apocalyptic narratives. The nature of climate change prevents this, since the human CO₂ emissions that are already in the atmosphere keep forcing the climate even though there are very few additional emissions after the Collapse. These changes happen very slowly, over the course of almost sixteen thousand years, and they affect the lives of individual humans in very different ways during this long time span. By 2031,

Carbon dioxide levels approached those of the early Eocene. Industrial outputs of CO₂ had stopped, but a long chain-reaction was in progress, and CO₂ in the atmosphere is long-lived. Permafrost thawing was releasing large amounts of methane. The manmade aerosols and other particulate matter that had been masking the heating from greenhouse gases were gone. ... In the West, summer temperatures of 110 degrees Fahrenheit were more and more common, the heat spells lasting for a month a time ... New records would have been set everywhere, if anyone had been keeping records.⁴¹

Rather than a post-apocalyptic text, *The Great Bay* is therefore a risk narrative in which crises continue to be underway all around and their impacts cannot ever be fully or at all mitigated. In order to show the human dimensions of these impacts, the representation of large-scale anthropogenic changes to the physical properties of the planet is combined with stories of individual humans who try to survive in an increasingly strange environment.

These stories differ considerably in both form and tone, supposedly because they are taken from very different sources and excavated from different archives, among them the “Archives of the Scholar’s Guild, Berkeley,”⁴² the “Library of the Order of Antiquities” which collects materials “750 years after the Collapse,”⁴³ and the “Institute of Medieval History,”⁴⁴ which operates 1,250 years later. They include short stories, newspaper articles, interviews, historical records, encyclopedic entries, legends, and an 80-page travel journal by Solomon the Monk about “The Great Trek from the Great Bay of California to the Bicentennial Rendezvous in Boulder”⁴⁵ in the year 2222, complete with detailed maps of future landscapes. These texts narrate a wide range of human responses to their changing environment, many of which are futile or tragic. Right after the collapse, a girl named Amanda is sent away from her home in Los Angeles by her infected mother so that she can find her father and be safe. No vehicle is moving in the city and “[t]here were bodies on the sidewalk on every block and swarms of buzzing flies.”⁴⁶ Amanda is afraid and hungry, but she keeps going in an environment that is dangerous and disgusting with corpses rotting everywhere. She meets Inez, who is also looking for her father, and together the two girls try to make their way north, meeting dozens of

⁴⁰ *Ibid.*, 41.

⁴¹ Pendell, *The Great Bay*, 33.

⁴² *Ibid.*, 9.

⁴³ *Ibid.*, 223.

⁴⁴ *Ibid.*, 247.

⁴⁵ *Ibid.*, 129.

⁴⁶ *Ibid.*, 10.

strangers along the way, some of whom help them while others try to rape or kill them. In the end, they seek the protection of a gang of bikers and live among them.

The need for protection and community looms large in many of the stories, as does the need for spiritual and religious consolation.⁴⁷ Jason Kilpatrick, a former hedge fund manager in Silicon Valley who is ninety years old in 2081 when he is being interviewed, states that “[a] lot of people are bitter about the Collapse,” but insists that it was actually “a good thing” because “we were wrecking the earth. Now the ocean is coming up because the ice is melting. We all knew, but none of us wanted to change. So the change came to us.”⁴⁸ The reason why Kilpatrick thinks it is a good thing that the old system collapsed is that it led to a new sense of community: “I like the way people help each other. That’s what people are supposed to do ... I don’t think anybody survived who wasn’t in some kind of group.”⁴⁹ Pendell describes many of such groups and their internal and external dynamics, but stays away from naively celebrating the beauty of these newly-formed communities. Kilpatrick himself acknowledges the enormously high death rate within the collective he used to be part of,⁵⁰ and his interview is followed by the second part of Amanda’s story, in which the Roadkill Rangers, as the bikers with whom she now lives are called, are decimated first by the pox and then by cholera, while others are shot in a fight with “a gang of police.”⁵¹ In the end she and Inez both are pregnant, in Amanda’s case without any certainty about the identity of the father. It no longer seems to matter. What counts in this group and in others like it is nothing but sheer survival. Although *The Great Bay* again and again affirms the human *need* for sustaining and sustainable communities, it puts a large question mark behind the ability of such communities to withstand what’s coming.⁵²

Nothing built by humans, the novel suggests, can really withstand what’s coming, simply because human lives and their products are no match for the forceful processes that have been set in motion during the early centuries of the Anthropocene. If, as Frederick Buell has observed, “environmental crisis has become part of people’s normality today,”⁵³ then this is all the more true for the future humans in Pendell’s novel, who live and die in a world in which “everything was too bad, too near to starvation for anyone to be able to organize any large-scale actions.”⁵⁴ While the immediate generations following the Collapse retain an acute awareness of the folly and greed of the civilization whose ruins they find all around them, this changes over time. Two hundred years later, we learn, “[t]he word ‘America’ was rarely heard. The ruins and everything about it were called ‘Precler,’ and fantastic stories were told about the

⁴⁷ We learn that in California “the sheer variety and diversity of the cults discouraged lethal rivalries. There were fundamentalist cults, Pentecostal cults—even the Methodists returned to the tents. There were antinomian Ranters, free-love Diggers, and all manner of communes: Eastern, New Age, prophetic, and libertine. There were pagan earth cults, death cults, Gnostic cults, tantric cults.” Pendell, *The Great Bay*, 6.

⁴⁸ Pendell, *The Great Bay*, 25-26.

⁴⁹ *Ibid.*, 26, 29.

⁵⁰ *Ibid.*, 28.

⁵¹ *Ibid.*, 30.

⁵² McKibben, *Eaarth*, xv.

⁵³ Frederick Buell, *From Apocalypse*, xvii.

⁵⁴ Pendell, *The Great Bay*, 35.

people who had vanished."⁵⁵ There is a steep decline in literacy that some find alarming, "[b]ut then, what was there to read, except 'Precl.'"⁵⁶ And so the new generations retain only a vague sense of the elaborate culture of the Oil People and the global disaster it brought about. Over time, their sustenance practices are becoming simpler and simpler and the scope and scale of human agency "resemble those of the Bronze Age" by 2521, remaining at that level for the next few thousand years.⁵⁷ The risks now faced by the population of what used to be California include the pointed arrows of their envious neighbors as well as the many natural hazards of the Great Bay area. What people have completely forgotten at this point is that these "natural" hazards are in fact as anthropogenic in nature as the arrows of their neighbors.

In the course of a few millennia, the ecological effects of the Anthropocene thus have become naturalized, but for the contemporary reader, the dramatic devolution of humanity as a result of dramatic environmental changes will in all likelihood seem strange and unsettling. Darko Suvin has famously argued that the process of "cognitive estrangement" is what enables the readers of science fiction to see their actual world in a new light.⁵⁸ What is made strange in *The Great Bay* is the natural and built environments of California and the rest of the world. The narrative's many protagonists must live within these strange new geographies, dwelling in the midst of prolonged environmental crisis because they have no other choice.

Genre, Storytelling and the Protagonists of the Anthropocene

"Literature," writes Richard Kerridge, "can provide an all-out apocalyptic vision of catastrophe, to shock and scare us deeply,"⁵⁹ and science fiction is one of the genres that have often attempted to do this, not least through the mechanism of cognitive estrangement. *The Great Bay* combines its "all-out apocalyptic vision" of the initial Collapse with the representation of human dwelling in crises in its aftermath. However, despite the many risks faced by individual humans and their often tragic fates, the text makes it difficult to care very much for any of them. Pendell's laconic tone and cursory treatment of his protagonists creates a distance between readers and the human suffering that is presented to them, not only in the Panoptic sections, but also in the short vignettes that introduce us to individual future humans. Kerridge argues that "A crucial factor for ecocritics is the extent to which the apocalyptic plot is combined with elements of literary realism, giving us characters and events that seem consistent with real possibility ('yes, this is how that person would react')."⁶⁰ Such realism is mostly absent from Pendell's portrayals of future humans, not least because the text provides us with few details and very limited insight into these characters' thoughts, goals and feelings. The reader never

⁵⁵ Ibid., 127.

⁵⁶ Pendell, *The Great Bay*, 128.

⁵⁷ Ibid., 215.

⁵⁸ Darko Suvin, *Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre* (New Haven: Yale University Press, 1979), 4.

⁵⁹ Richard Kerridge, "Ecological Approaches to Literary Form and Genre: Urgency, Depth, Provisionality, Temporality," in *The Oxford Handbook of Ecocriticism*, ed. Greg Garrard (Oxford and New York: Oxford University Press, 2014), 372.

⁶⁰ Kerridge, "Ecological Approaches," 372.

gets to know any of them well enough to have much of an idea of how they would react in a given situation.

In a way, this narrative strategy mirrors the continuously waning influence of humans over their own destinies and that of the environments around them. They are of very little consequence not only to their immediate and distant surroundings but also to the reader. However, since, as Eric Otto has pointed out, effective cognitive estrangement requires elements of both strangeness and familiarity,⁶¹ a certain intimacy with the characters is needed to fully understand and *care about* their fates in an increasingly strange environment. Narrative empathy, explains Suzanne Keen, is “a core component of emotional response to fiction,”⁶² and the creation of this complex affective transaction between writer, text and reader one of the central tenets of realist fiction. Without such empathetic ties there is little interest on the part of readers in the goals a character seeks to achieve and only very limited affective engagement in that character’s story. Reducing human protagonists to brief and mostly unremarkable and inconsequential presences on a dramatically changing planet might mirror the actual future we are facing, but it also runs the danger of disappointing the expectations and needs of many readers, who savor fictional texts not least because of the emotional experience they offer them.

Since the lives of individual humans are reduced to unrelated snapshots scattered throughout the text, it is ultimately the story of the Great Bay itself – and by extension the planet as a whole – that provides some kind of continuity and potentially sustains the interest of the reader. Pendell’s Earth is no avenging Gaia but rather a planet that reacts with great sensitivity to physical and chemical forcing. The changes it undergoes as a result of human activity are quite dramatic:

By 2250, sea level had risen eighty feet. If Antarctica continued to melt, sea levels could rise another two hundred feet. Typhoons moved to high latitudes in the Atlantic, mixing the waters. The Gulf Stream gradually found a stable course, and heat began moving again to the British Isles and Northern Europe, ending their short little ice age, but not the global flooding of the ocean.⁶³

The earth had entered a Pliocene climate in half a millennium. Rainfall was heavy in the far northern and southern latitudes, but the sub-tropics were deserts. Vegetation zones shifted too quickly for many plants and trees or the creatures who depended on them to follow. About two thirds of the world’s plant and animal species died out.⁶⁴

It is an ever stranger world that Pendell presents to us, as his nonhuman protagonist changes and develops as a result of anthropogenic forcing of the climate system. Eventually, the glimpses into human life get shorter and shorter, dwindling to flashes as the planet heads inescapably into the next Ice Age. However, not even this “long winter” will erase the lasting effects of the Anthropocene: “When spring at last reawakened and the ice again retreated, the earth would still be a poorer place. There would be no surface deposits of ores or minerals, no

⁶¹ Eric Otto, *Green Speculations*, 8.

⁶² Suzanne Keen, *Empathy and the Novel* (New York: Oxford University Press, 2007), ix.

⁶³ Pendell, *The Great Bay*, 123-24.

⁶⁴ *Ibid.*, 187.

underground reserves of energy, and far less resilience in the biosphere."⁶⁵ Fourteen thousand years, Pendell reminds us, is nothing on a geological timescale and the dubious accomplishment of twenty- and twenty-first century humans is that they change their planet in such a lasting way that the transformations outlast ice ages.

Conclusion

The Great Bay represents an ambitious attempt to tell the story of anthropogenic climate change on a time scale that is large enough to accommodate its relatively slow nature. Unlike Roland Emmerich's *The Day After Tomorrow* (2004) or even Kim Stanley Robinson's Science in the Capital Trilogy, the novel does not compress time in order to make climatic processes more easily accessible and dramatic for readers.⁶⁶ Instead of offering extremely unrealistic time frames that allow for narratives that center on individual human protagonists, Pendell adapts the temporality of his novel to the comparably slow pace of climate change and is willing to live with the consequences this decision has for his narration of human characters and stories.⁶⁷ As Adam Trexler and Adeline Johns-Putra point out in their 2011 survey of climate change literature, "climate change asks for authorial innovation, demanding plotlines and characterizations that participate in the global, networked, and controversial nature of climate change."⁶⁸ This resonates with Heise's earlier call for stylistic innovation and the "search for the stories and images of a new kind of eco-cosmopolitan environmentalism that might be able effectively to engage with steadily increasing patterns of global connectivity, including those created by broadening risk scenarios."⁶⁹ Pendell's novel attempts to show the big picture and the patterns of global connectivity, both on a temporal and on a spatial level, but the downside of his mode of narration is that the human readers it is intended for lack protagonists they can identify with. Whether a better writer would have been able to provide them with more engaging snapshots of future human lives remains open to debate.

However, the story Pendell tells about the future of planet Earth is nevertheless fascinating and disturbing. Rather than fostering empathetic ties to individual human protagonists the text succeeds in instilling in its readers a sense of awe and wonder in the face of these great transformations. As Otto has pointed out, "many environmental writers share the conviction that experiencing the awe-inspiring beyond, whether real or imagined in fiction, results in a more ethical perception of and behavior toward nonhuman nature,"⁷⁰ and Pendell's

⁶⁵ Pendell, *The Great Bay*, 268.

⁶⁶ Emmerich's film compresses its rapid climate change scenario into the course of just a few days.

Robinson's trilogy isn't quite as daring in matters of time but the stalling of the Atlantic conveyor belt also in this case brings about an ice age much more quickly than predicted by scientific scenarios.

Robinson has referred to this process as "terraforming Earth." Kim Stanley Robinson, *Imagining Abrupt Climate Change: Terraforming Earth* (Seattle, WA: Amazon Shorts, 2005).

⁶⁷ Pendell notes in the Afterword to his novel, however, that "for the purposes of the story [he has] used accelerated rising of sea levels beyond that of current projections. And yet, such rises are not impossible." (Pendell, *The Great Bay*, 217).

⁶⁸ Adam Trexler and Adeline Johns Putra, "Climate Change in Literature and Literary Criticism," *Wiley's Interdisciplinary Reviews: Climate Change* 2, no. 2 March/April (2011): 185-200.

⁶⁹ Heise, *Sense of Place*, 210.

⁷⁰ Eric Otto, *Green Speculations*, 13.

Afterword demonstrates his dissatisfaction with current attitudes and practices. Equally remarkable are his imaginings when it comes to human adaptation to the strange new world he has created. There is little left of nineteenth and twentieth century beliefs in the human domination of nature by the means of science and technology. Human communities are shown to be fragile and extremely vulnerable to changes in their environment, and the knowledge of all scientific advances of the past few hundred years is lost forever. The great Collapse is not the end of everything, and there are still moments when a new/old form of human life prospers, but it definitely is the end of a certain kind of human civilization, a civilization that was unable to comprehend that its behavior was reckless and self-destructive. Despite its limitations, Pendell's narrative about the future life of the Great Bay thus is a grim reminder of the risks produced by what we have come to call the Anthropocene. As Kate Rigby has noted, the term "implicates us all in a call to responsibility: the future of Earth, understood as a diverse collectivity of more-than-human life and the conditions in which such life either thrives or fails, we are told, now lies in our human, all-too-human hands."⁷¹ *The Great Bay* looks back in time from a fictional future and attests the utter failure of human care and responsibility.

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⁷¹ Kate Rigby. "Writing in the Anthropocene: Idle Chatter or Ecoprophetic Witness?" *Australian Humanities Review* 47 (2009): 173-187.

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