

Journey Planet

67

Anthropocene Ruminations



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INTRODUCTION

By Amanda Wakaruk & Olav Rokne

Guest Editors

A wall of smoke enveloped the Worldcon like an ashen blanket. Fire marshals sounded the alarm, and prohibited anyone from exiting the building. At times, crossing the street was considered an unacceptable health hazard due to air quality. The roads in and out of the city were closed due to fires to the north, to the east, to the south and to the west.

As aficionados of our genre celebrated works of fiction built on decades of technological optimism inside the ballroom of the Spokane Convention Centre, the air literally tasted of ash, and smoke, and policy failures on a global scale. This is the defining flavour of the Anthropocene.

Given that the causes of climate change are rooted in technological transformations celebrated by the past century of science fiction, we believe that enthusiasts like us have some responsibility to grapple with that legacy and consider what comes next.

Driving home through blackening forests that were nearly invisible behind the smoke, it felt like this should be an inflection point for the genre. The oceans are rising. The fresh water is disappearing. The world burning. The tundra melting. The clock ticking.

In the seven years since then, it has been difficult not to see reflections of today's climate change crisis in a wide swath of Hugo Award finalists; from NK Jemisin's *Broken Earth* trilogy, to Oghenechovwe Donald Ekpeki's *O2 Arena*, to Mary Robinette Kowal's *Calculating Stars*. If you read between the lines, you can even read Kim Stanley Robinson's *New York 2140* as having subtext about climate change.

As Canadian cli-fi author Premee Mohamed has said, it is no longer possible to believably write near-future fiction without the story being impacted in some way by the climate change crisis.

This is the defining crisis of our age. We might suggest that climate change fiction — or cli-fi — is quickly becoming the defining subgenre of our time.

In August this year, our friends James Bacon and Christopher Garcia invited us to guest edit an issue

of their Hugo-winning fanzine *Journey Planet*. They asked us what topic we'd like to cover.

The two of us had often talked about broaching the subject of climate change fiction in our own, more modest fanzine, the *UHBCB*.¹ But the topic seemed too big for our usual format, where we try to boil things down to 1,000 words or fewer. It also seemed too serious for our quirky, irreverent, and iconoclastic style.

On the other hand, *Journey Planet*'s themed format, in which each issue can do a deep dive into a topic, seemed like a perfect fit for talking about the intersection of climate change and speculative fiction. We could invite people to examine facets of the topic that are neglected in other fora, or specific works that they think are exemplars of the subgenre, or possibly even to write some cli-fi of their own. And that's exactly what we did. With a semi-permiable 1,000-word limit.

To say that we're pleased with who stepped forward with contributions — and the quality of the writing — would be an understatement. People we've known for years, familiar faces from the *Journey Planet* family, some contributors who we had never heard of but who provided thoughtful and nuanced pieces.

We are thrilled to bring together reviews of important novels that remain relevant today, observations about how cli-fi was presented in decades past and how it should be presented moving forward, and creative writing that muses about what the future holds.

As editors, we sought out voices from beyond our own catchments and are excited to present commentary that is thoughtful and critical in ways that we hope will resonate with a diverse audience. As one of the Earth's most influential climate fiction authors says in our opening interview, "it's about the policies." It's easy to see that truism shine through in most of the pieces in *Journey Planet*'s 67th offering, especially those focused on the science that climate change is defining, a science that is, much like the climate itself, being shaped by a particularly adaptive and persistently hopeful species.

Thanks for joining us as we try to barrel this wave of cli-fi in an ocean that's rising fast.

¹ hugoclub.blogspot.com

CONTRIBUTORS

James Bacon

Chuaigh James go dtí Coláiste Mhuire, sciol lan gaelach i mBaile Átha Clitah agus tá sé thiománaí traenach agus stiurtheoir tiománaithe foghlaimeora. Tá sé heagarthóir irisín-lucht leanúna a bhuaigh Hugo. Tá sé inimirceach i gconnaí i Sasanch, agus tá sé lucht leanúna ar leabhair ghreannáin agus ar fhicsean eolaíochta.

Gautam Bhatia

Gautam Bhatia is an Indian speculative fiction writer, and the co-ordinating editor of *Strange Horizons*. He is the author of the science fiction duology, *The Wall* and *The Horizon*, as well as numerous short works.

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Cora Buhlert was born and raised in Bremen, North Germany. She has been writing since her teens and is the winner of the 2022 Hugo Award for Best Fan Writer and the 2021 Space Cowboy Award. When Cora is not writing, she works as a translator and teacher.

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Marshall is an economist and public servant. He reads science fiction and fantasy, regularly plays Dungeons & Dragons, and thinks constantly about the state of consumer protections in *Star Trek*. He co-hosts the podcast *Androids and Assets*.

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Victoria Carter is from the Cree Nation of Frog Lake, Alberta in Treaty 6 Territory. She once lived in Edmonton, but now calls Vancouver Island home. She is adamantly Childfree by Choice, and believes that in the context of our shared exacerbating climate problems, choosing NOT to have children, is an act of rebellion, amidst the societal pressures to conform.

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Chris Garcia is a curator, archivist, fanzine editor, extra in *Lost Boys*, father of two, husband of one, and professional wrestling enthusiast. He has won a couple of Hugos, written a book, *Food and Crime*, which will hit shelves in 2023. He is currently based in NorCal.

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Conceptual artist Clara Objois works in free-form mixed media including washable water colour, pastels, non-toxic crayon and play-dough. This is her first contribution to a science fiction publication.

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As an avid reader and writer, Nicholas Pallaris appreciates multiple genres — particularly adventure, mystery, and psychological horror. He is expanding his work into climate fiction, a current and relevant subject of our age.

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Photographer, journalist, and public relations professional Olav Rokne is afraid of climate change almost as much as he loves science fiction. He is proud to have co-edited this fanzine with Amanda Wakaruk, his partner in life and in fandom. Together they have been on the Hugo shortlist twice.

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Jason Sanford's stories have been published in *Asimov's Science Fiction*, *Interzone*, *Beneath Ceaseless Skies*, and many other publications while his novel *Plague Birds* was a finalist for both the Nebula and Philip K. Dick Awards. Jason also reports on the SF/F genre with his *Genre Grapevine* column.

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Amanda Wakaruk is the co-editor of this fanzine and also the *Unofficial Hugo Book Club Blog*, a passion project with her partner Olav. Apocalyptic cli-fi is her sub-genre of choice and she tries to attend every related session at Worldcon.

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Paul Weimer is an SFF fan writer and podcaster. His many reviews and interviews made him a Hugo Finalist for Best Fan Writer in 2020, 2021 and 2022. He is best found on the Internet, including Twitter, Mastodon and elsewhere, as "PrinceJvstin".

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The body typeface used in this publication is Charter, a transitional serif typeface designed by Matthew Carter in 1987 based on Pierre-Simon Fournier's characters, originating in the 18th century.

The headline typeface is Hiragino Sans, a contemporary semi-serif designed in 1989 by Tsutomu Suzuki, Osamu Torinoumi, and Keiichi Katada.

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"THE HOPE KEEPS POKING THROUGH"

A conversation with Kim Stanley Robinson

*America's most prominent author of climate change fiction, Kim Stanley Robinson has won two Hugo Awards for best novel. His 2020 novel *The Ministry For The Future* was named by Barack Obama as one of the most important novels of the year. He was interviewed by Olav Rokne in early December, 2022.*



Kim Stanley Robinson
(photo by Sean Curtin)

OR: Why is it important to have fiction that realistically depicts the impact of climate change?

KSR: Fiction is unusual in that while reading it, you are in different times and places, and in other people's minds. These are two semi-magical situations, but fiction makes them real. Then, if by that generous act of imagination which is reading, you spend some time actually in a climate-changed situation, it becomes more real to you, and you finish reading and are changed, and want to do more to avoid climate change at its worst. Not many other experiences are the equivalent of this one, so it's important.

OR: Given that the causes of climate change are rooted in technological transformations celebrated by the past century of science fiction, what responsibility does the genre (its authors and fans) have to grapple with what climate change means?

KSR: I don't think science fiction has to worry too much about culpability in this matter — it's a much more general cultural structure of feeling. Along with the rah-rah science fiction that said we could all live in spaceships and fly to the stars and download our brains into computers, etc. etc., there has always been a strand that was saying, Watch out, it won't work, this is hubris, we're headed for a fall, etc. So sf is just one part of a larger civilizational project of imagining our future.

OR: What do you hope to see in the cli-fi genre in the next 20 years?

KSR: More solutions and successes, realistically portrayed, to give people not just hope, but plans for action.

OR: At what point in your career did you realize that you were the "science fiction about climate change" guy? Was this planned?

KSR: It was not planned, that wouldn't be possible. I got interested in climate change early on, and it was a mirror-topic so to speak in my Mars trilogy, where they were trying to create climate change on the largest level (terraforming, geoen-gineering). Then on my trip to

Antarctica, all the scientists were talking to me about it — that was 1995. After that, any time I set a novel in the near future (which was not every time, but pretty frequent) it had to include climate change to be at all plausible. So it's kind of like getting sucked down into the Maelstrom. Events pulled me into it.

OR: How has your worldview shifted since you first started writing climate fiction?

KSR: I've gotten more worried, and more intent to craft a message that will perhaps change people's thinking about climate change. My worldview has developed a kind of tunnel vision — we need to squeak through this century without a mass extinction event — everything else seems less important to me now, including the big attractive possibilities of what could happen for humanity if we did squeak through.

OR: If you tackled the Mars trilogy today, how might it be different?

KSR: That's an interesting question about the Mars trilogy and how I would write it now — very hard to answer.

I like that trilogy, I wouldn't change a word of it, mainly because of the characters and plot. I think it's a good novel, but it's not a practical plan. It looked more like a practical plan when I wrote it, but we've learned things about Mars since then that change the problem considerably. And climate change renders it a project for the 23rd century, if we succeed in stabilizing ourselves relative to Earth. Nothing will work without that, Mars does not function as a bolt hole or second basket for our eggs or safe haven or however you want to put it; that's a fantasy, or at the very least, bad science fiction. Luckily, if you read the Mars trilogy you can see that that novel already knows that Earth is key to everything. So I'll stand pat.

OR: Is geoengineering the new face of climate change denialism?

KSR: I don't think geoengineering is climate change denialism. On the contrary, we may need to do it as an emergency action. People are seriously discussing the governance issues now, and I'm a small part of that, but I'm talking about international law and treaty relations and so forth.

We are probably going to carbon overshoot pretty considerably, so we'll have to draw down some CO₂ from the atmosphere, and maybe deflect some sunlight even. Knee-jerk reactions against geoengineering are now very inappropriate, we are past that moment (which was maybe 1990) and into the long emergency, into an all-hands-on-deck mentality.

OR: What is your response to those who suggest that capitalism can just 'invent its way out' of the climate catastrophe?

KSR: I don't think that's right, but on the other hand we are in a capitalist world order, and need to cope with climate change, so it isn't right to insist on capitalism changing instantly to a better system, as much as I would like to see that.

I would call for a rapid reform of capitalism by way of an insistence on social and climate justice, Keynesian stimulus spending, which means a shift from neoliberal austerity and market power back to governments seizing the direction of the economies. So: sharply

progressive taxation on individuals and corporations, incomes and assets; massive carbon quantitative easing; hard boundary regulations as guardrails; possibly the governments of the world taking over their economies, as during World War Two, to direct human effort to meet the challenge.

That might still include private capital and private businesses, as during World War Two, but it wouldn't be what we have now. So: yes, 'invent its way out of the climate catastrophe' by reforming itself radically to something that these days we might call eco-socialism, but names aren't important, you can call it reformed capitalism if you want, it's the policies that matter. Intervention needs to be financial and at the level of political economy, at this point.

OR: I only just recently learned that you studied under Fredric Jameson, and I have to ask what that was like? How has his work influenced your writing?

KSR: He's been a huge influence, one of my most important teachers, and a mentor and friend, an exemplary figure. I have to say, I've been very lucky with my teachers: Catherine Lee (high school), Donald Wesling (my

advisor at UCSD), Damon Knight, Gary Snyder, Ursula Le Guin, Gene Wolfe — all teachers of mine, and there were others too. Rather amazing; and I've paid close attention to what they've taught, and found all that very helpful.

Jameson writes about "cognitive mapping," which is to say getting your bearings in the face of the unimaginable immensity of modern life, and I think his work has been a model for me in that way, as well as teaching me an immense amount about history, literature, and politics. I think the influence on my writing must be deep, although we are in different genres, and his style is unique. But from him I can see that you can challenge readers, really drop them in the deep end, and some will like it. And a well-turned sentence (he's marvelous at the sentence level) is a joy in itself.

*"Knee-jerk reactions
against geoengineering
are now very
inappropriate, we are
past that moment ...
and into
the long emergency."*

continued on page 8

“I am scared... but hopeful.”

continued from page 7

OR: My favourite of all your novels is *The Years of Rice and Salt*. Did you ever consider writing more alternate histories?

KSR: Thanks for that, it's one of my very favorites among my own books, a big novel that broke my brain, a testament to a relative who died young (the K character) and so on. But it also made me aware that the alternative history is a relatively weak form, rhetorically, compared to SF proper.

In regular science fiction, the story says THIS IS GOING TO HAPPEN. Sort of; in any case, a powerful stance, resembling prophecy. But the alternative history (definitely a sub-genre of SF for historical and formal reasons) the story says, This didn't happen, but if it had, it would have been interesting. True, sometimes; but not quite as powerful.

So I presume I'll leave *Years of Rice and Salt* as my contribution to that fun sub-genre, but if a good idea came to me, I wouldn't dodge it.

OR: What do you want climate fiction readers to know about your work?

KSR: Good question.

Maybe, that I have done my homework, and am trying to be honest about what's

possible. That I am scared, but hopeful, and would like to smack people on the nose with hope, to wake them up to the possibilities.

Also, *The Ministry for the Future* is clearly the climate fiction people are responding to the most strongly, but I think readers could have a lot of fun, and learn more

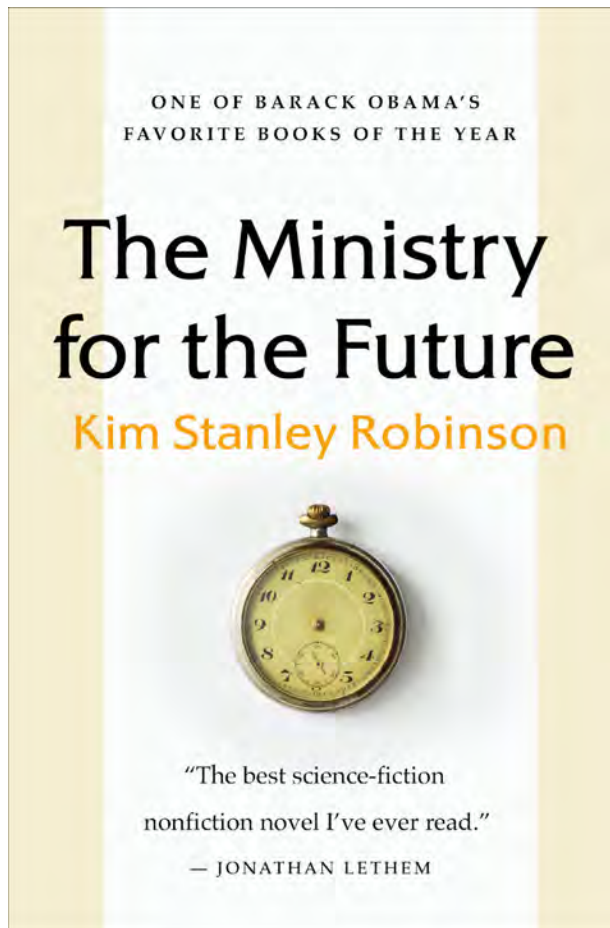
too, with both *Green Earth* and *New York 2140* — also *Aurora*, *Shaman*, *2312*, *Red Moon*, *Antarctica*, *Galileo's Dream*, etc.

OR: Are there authors publishing fiction today who you think are adding to the conversation about climate change in a unique or especially interesting way?

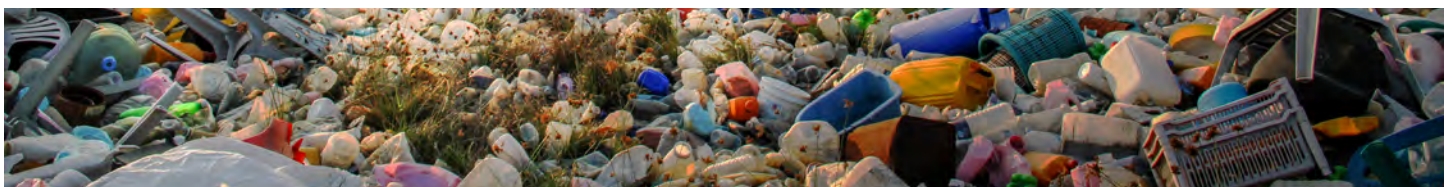
KSR: Yes, for sure. Lydia Millet, James Bradley, Cory Doctorow, Jonathan Lethem, Andrew Hudson, Karen Joy Fowler, Molly Gloss — on and on it goes — also all the younger writers just getting started, calling themselves hopepunk or solarpunk — terrible names as I keep telling them, they should just say climate fiction, or utopia — but really excellent fiction.

There are so many new exciting stories to tell. Lots of them are suffused with suffering and grief, but that's where we are — and the hope keeps poking through.

OR: Thank you again for taking the time to chat with us.



Kim Stanley Robinson's 2020 novel *The Ministry for the Future* depicts signatories of the Paris Climate Accords creating an organization to look out for the interests of future generations.



THE ROADMAP TO DROUGHT

Bad legislation and its devastating impacts in *The Water Knife*

By Victoria Paterson

The most terrifying thing about Paolo Bacigalupi's searing 2015 novel *The Water Knife* isn't the scale of the violence — physical, systemic and bureaucratic — that bleeds off nearly every page. He creates a near-future world where the southwestern United States is locked in the 'Big Daddy' drought, where a 'Clearsac' to process your urine back into usable water is a must-have accessory for most, where even the smallest details, such as designer dust masks and Category 6 hurricanes, speak of all-too-possible climate devastation. But in that world the most horrifying thing is that the laws, politics and policies that are the root causes of such human misery are grounded in non-fiction.

I first read this monument to the hubris of carving populous communities in arid regions not suited to supporting them in 2015, while on a plane to Las Vegas. Seven years on, I still believe the brilliant thing about Bacigalupi's plot is that, while the book is very much an action-packed thriller, so much of the narrative turns on the idea of water rights that it's really an incredibly paced novel about legal precedents. Immersing oneself in this climate change-fuelled nightmare for a few hours of reading is an incredible illustration of the long-term impacts and power of policy.

The Colorado River Compact, which governs the amount of water states can syphon away from the river, is a real agreement dating back to 1922. In the book Bacigalupi extrapolates this into a world where California has encased parts of the river in a 'straw' to prevent access and evaporation. Books and people that are name-checked, like *Cadillac Desert* (published 1986) or John Wesley Powell, who was exploring the American West in the late 1800s, all are real — and all are predicting the issue of water scarcity for populations that rely on the Colorado River. While we might hope that as bleak a future as the one that Bacigalupi imagines for his novel might be averted through policy

changes or human decency, his speculations on what could happen are all very grounded in reality.

"A few simple sheets of paper with the power to make Phoenix and Arizona the arbiters of their own fate instead of a place of loss and collapse," thinks the journalist character Lucy. Covering the region for 'Bloodrag' media, she gets involved in discovering the 'senior water rights' that could shake the foundation of the resource division that has created stark haves-and-have-nots in the dust-tinged world.

Our laws and government policies may be just a few simple sheets of paper, but they carry great weight. They can be used to decide the winners and losers, not

just for the time when they are drafted but for generations to come. Our policy-makers must consider not only the short-term impacts or gains, but take a long, multi-generational view. They should turn a critical eye on unquestioned policies from the past that govern the present to discern the potential for environmental catastrophe. Too often the world's politicians hasten to action to appease what amounts to a societal itch of today, not knowing — or, even worse, knowing but ignoring — what the solution may cost the environment. The book offers a reminder that governments often understand the long-term costs, but ignore them for political convenience. To help ameliorate this issue, we must not skip over boring-seeming policy discussions and debates. Even astute political spectators may find their eyes glazing over, depending on the topic, but we must demand better from our legislators. Overstretched media do not always have the time or resources to do a good job of explaining why a policy is important to a general audience. Yet this work must be done, by media, wonks, and the legislators themselves, to avoid the kind of hubris that leads to disaster, whether it's forcing a desert to bloom in the name of expansion or sacrificing precious greenbelt resources.

In *The Water Knife*, Bacigalupi sounds a clarion call for ensuring that the legislation of today does not become the devastation of tomorrow.

Forcing the desert to bloom in the name of expansion.

THE LIES THEY WILL TELL YOU

Fiction that denies climate change has an outsized impact

By Camestros Felapton

Science fiction is often portrayed as a genre with inherent progressive values, but it has its own history of right-wing fiction. While a number of notable science fiction writers have expressed contrarian views on the topic, global warming is not a topic that has been well explored in fiction from a contrarian perspective. Two novels, though, stand out as examples of contrarian cli-fi.

Fallen Angels

Fallen Angels is a 1991 satirical novel by Jerry Pournelle, Larry Niven, and Michael Flynn. Its main claim to fame (beyond its stance on climate change) is the multiple characters who are thinly disguised figures from fandom (such as Mike Glyer, Toni Weiskopf, Harlan Ellison, and many others).

It depicts a near future, in which the world has become dominated by “Green” anti-science, new-age governments. This is a dysfunctional world of political correctness and anti-rationality gone mad with power. The world has also become very cold. For the backstory to *Fallen Angels*, the greenhouse effect is both accepted and a key point. What the anti-science governments in the novel had failed to realise is that when they reduced emissions, the Earth was on the brink of an ice age. Ironically, global warming had been the only thing stopping the world from plunging into severe cold.

In the plot, two astronauts crash to Earth after an attack by a luddite American government. Temporarily unable to function in Earth’s gravity, the astronauts are dependent on a few brave citizens who still believe in science. And who would these brave citizens be? Why, science fiction fans of course! Not just ANY fans mind you but the organising con-committee of the next Worldcon.

That this humorous novel had staying power in right-wing circles is surprising. Partly this was due to the influence of Jerry Pournelle in online culture. As an early adopter of home computers, as well as promoter of libertarian/paleo-conservative views,

Pournelle was a cultural touchstone for right-wing nerd culture. *Fallen Angels* also offered a way for a work of fiction to challenge the political and scientific consensus on climate change. Rather than taking a stance that challenged the role of science, *Fallen Angels* alters who the ‘true’ guardians of science are. The fans who band together to rescue the astronauts stand in opposition to the anti-science luddites who control the political process. Of course, in the fantasy world of *Fallen Angels*, global cooling is the scientific truth.

Meanwhile, the government is opposed to space exploration and in favour of draconian regulation. Worse, the policies they advance often work counter to their supposed objective: inefficient recycling programs that consume more than they save, for example. The book advances the idea that the incompetence was on purpose. If the tyrannical Greens actually solved environmental problems, it is argued, then they wouldn’t have anything to protest about. What *Fallen Angels* provides to the genre of contrarian climate fiction is a villain with a motive: authoritarian environmentalists who distort and conspire against the ‘true’ science.

Fallen Angels tackles its subjects with humour but there are two elements that have made it popular in climate change contrarian circles:

- Global cooling rather than warming
- Greens and environmentalists as not just power hungry but as people who spread alarm about global warming as a means of gaining political power

State of Fear

Surprisingly Michael Crichton’s 2004 novel *State of Fear* features characters who are broadly sympathetic to the belief that humanity is causing global warming and that environmental issues are of great importance. For this didactic climate change novel, Crichton contrives to have these characters go through a process of revelation.

Peter Evans is a lawyer whose major client is a wealthy philanthropist enamoured of environmental causes. At the start of the novel, Evans has a middle-class liberal’s perspective on global warming. He is aware of the

issue, moderately well informed based on newspaper articles and convinced that it is politically important and scientifically established. Crichton then takes Evans on a journey both physical and cognitive. He gets his views repeatedly challenged and also has to avoid being murdered by eco-terrorists in a variety ways, including an Antarctic crevasse, a flash flood, targeted lightning, and a blue-ringed octopus, as well as being nearly eaten by cannibals.

Crichton places the burden of argument on a secondary character, John Kenner. Kenner is much closer to the action hero stereotype. He is a brilliant scientist, an accomplished skier and an agent for a secret intelligence agency. As well as fighting the bad guys he repeatedly breaks into monologues advancing skepticism about climate change and environmentalism.

While Kenner is both the action hero character and the main didact of the novel, Crichton adds in an additional character, Norman Hoffman, to deliver the author's central thesis. The character literally gate-crashes into the novel, with Peter Evans encountering him being led away by security guards from a climate conference. An emeritus professor specialising in the 'ecology of thought,' Hoffman then delivers another argumentative infodump on Evans.

According to Hoffman, society is in the grip of the 'politico-legal-media complex' or PLM — the nexus of media and political elites who manufacture fear and panic in broader society to maintain control. Environmental concerns, argues Hoffman, are simply a replacement by the PLM for their previous instrument of control: fear of a nuclear war.

Crichton's environmentalists are wealthy liberals, Hollywood stars, and rich business people rather than left-wing agitators. The more extreme eco-terrorists are little more than Bond-film baddies. There is a sexy woman with a foreign accent, and a large American guy who do a lot of the actual murdering. As with *Fallen Angels*, environmentalism is portrayed as a combination of naivety, cunning, and anti-scientific irrationality. Pseudo-scientific scare campaigns such as fears around electromagnetic fields are treated as indistinguishable from concerns about global warming.

Hoffman's PLM concept — the literal 'state of fear' that

gives the book its title — is used to give cover for the absurdities of the politics of the book. Crichton needs his readers to believe that the pro-capital governments of the Western World industry leaders, media companies, and billionaires have all decided to actively believe in a set of anti-scientific ideas and public policies that work against their interests. Hoffman's PLM concept is a conspiracy of fear as an instrument of social control by industry, political elites, the very wealthy, and environmentalists.

Substitute 'the left' for 'environmentalists' and you have the current dominant ideology of the modern right. Press a modern-day opponent of public health measures to limit COVID-19 and you will get a similar explanation of what is "really" behind COVID-19 vaccinations.

State of Fear is imbued with a kind of proto-alt-right perspective on the world. Hoffman and Kenner both serve to 'red-pill' (in modern alt-right terms) Evans about climate science. Not only does Evans go on a journey of enlightenment about the true nature of the world, but through exposure to Kenner and the frequent physical danger he is put through, Evans becomes more masculine and more attractive to the sexy women around him. That's not even subtext in the novel but is overtly stated.

Contrarian climate fiction is not a fertile genre. Even the most commercially successful example leans heavily on a didactic mode that right-wing writers claim to hate. Yet both *Fallen Angels* and *State of Fear* continue to be cultural reference points in right-wing spaces from Instapundit to climate misinformation blog *Watts Up With That*.

The fact that American Senator Jim Inhofe made *State of Fear* required reading for members of the Senate Committee on Environment and Public Works is a sad statement on the power that denialist climate change stories can have. The modern right took very seriously the late Andrew Breitbart's truism that politics is downstream of culture. There is therefore an appetite for fiction that validates reactionary beliefs.

It is not the details of these books that has lasted but the central message that, despite all the actual evidence to the contrary, the right has not just God on their side but also science.

*There is ... an appetite
for fiction that
validates
reactionary beliefs.*

THE LOANER

By A.L. Yakimchuk

Don't judge me for getting paper. Renting the ebook was too expensive. And now I have to go out in that mess to take it back.

"What do you think, Madget, is a level-two filter going to be good enough?" The tortoiseshell cat stretches and purrs, content with having found a spot on the window ledge close enough to an air purifier to give her geriatric lungs some help.

I snap the filter into my respirator. It's my last level two but I'm pretty sure there's at least one LungHelper™ machine between the condo and the book drop. I look out the seventh floor window. The red ball that marks the spot where the sun should be during forest fire season hangs low over Stanley Park Island. A thick fog of smoke obscures most of the island's remaining bushes.

My realtor had used this view to convince me that the unit was a good financial investment. But that was when there were still a few old growth trees in the park. And before the park itself became an island. The new street of water wouldn't have been so bad, except then the city decided to install an ugly desalination plant in that spot. Yeah, I wasn't moving any time soon unless I wanted to live in squalor.

The aluminized fabric of my WeatherProof™ onesie is starting to age and isn't as loose fitting as it was when I picked it up three years ago, but I still manage to struggle into it. The suits were issued by the Ministry of Health Services after a surge in heat shock patients swamped emergency rooms. These days they don't bother reporting those things but most people still wear the suits. I mean, they do help.

I balance my headgear and the plasticized loaner book under an arm and make my way down to the building's entrance.

Damn it. There's someone waiting for an Uber in the

lobby. And their WeatherProof™ suit is a nicer, newer style than mine, with a contoured hood hanging attractively on their shoulders.

They turn to face me. "Oh, hi there! How's your day going?"

They must be a tourist. No locals are that friendly. Given that the odds of having to continue this conversation another time are low, I decide to answer.

"Not bad. Just returning a loaner book." I hold up the book, so they can see the cover. "Been a while since I had to venture outside. Have you been out in the heat lately?"

"Oh yes. I was outside yesterday. And now again today too! Feeling very risqué about it all but, hey, you only live once!" Their eyes move to the book. "Neat. Haven't seen a real paper book in, cringe, a few forevers."

"Yeah, the copyright fees on the ebook were just too high for me. So I opted for the lower rate they give you on the paper version. Had to wait awhile but it was worth it. I've read this one three times now."

"Impressive. What's it about?"

Ah. So I'm talking to one of the willfully ignorant. Good to know. I choose my words carefully.

"It was a really important book in its day." I pause for emphasis. "Now it's considered a classic.

The author really helps you understand the world, you know. Make sense of what's going on."

They tip their head in interest, so I continue. "He was a famous, celebrated scientist and he explores the value and importance of fact, of evidence." Another pause. "But in an accessible way, so it helps the reader understand the language of those who are trying to pull the wool over our eyes."

"Oh. That does sound important. I'll add it to my reading list." They point their Wristlink™ at the book, an audible click confirming that the information has been retained in whatever reader-assist app they're using.

*I'm pretty sure there's
at least one
LungHelper™ machine
between the condo
and the book drop.*

“Well, if you’ll excuse me, I need to get this back to the licensed loaning agents.”

“Of course. Have a safe day.”

Fumbling, I secure my creaking headgear and seal the suit. The first filtered inhale is deep and filled with the familiar smells of manufactured cotton and sweet eucalyptus, my scent of choice. I save the exhale for my breach into the heat. And the intensity of that heat is worse than I had hoped, even with the suit. It’s like someone cranked the dial on gravitational force. On Mars.

I’m less than a block away from the condo when beads of sweat start snaking their way into the worst possible crevices. Picking up the pace, I pass two LungHelper™ machines. The first is empty and the second vandalized, its contents long gone. Dammit. I’ll need to come back via a less direct route to try and find a working machine.

The smoke becomes thicker as I get further from the water and I almost collide with a refrigerated mobile seafood station. Its owner laughs at me, their voice muffled by the sturdy, outdoor-worker-approved WeatherProof™ suit.

“Want to buy some seafood? I have a good deal on prawns right now — I’ll even throw in a cooler bag. Fresh from the sea.”

My bullshit radar lights up. “Where did you find prawns? I thought temps and acidification wiped them out.”

They give me a conspiratorial smile. “Well, I got some if you want them. Good price.”



Art by Kimberley Kemmer

I turn and leave, shaking my head. “No thanks.”

“Your loss! These won’t last!”

Another two blocks and I’m finally at the book drop, which has been converted from an old ATM. The bank building it was originally installed at is now a shelter. There’s a person in front me, also wearing one of the original Ministry-issued WeatherProof™ suits. They seem to be having problems with the payment system. I nervously scan the street around me, which takes some obvious pivoting to accomplish.

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The Loaner

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My suit double turns to leave just as I turn back to the machine, and we have one of those awkward moments where neither is sure who should move left and who should move right. Eye contact makes the moment worse so they look down at the book I'm returning instead.

Their eyebrows jet upwards and this time the eye contact is intentional and committed. "That's available here? How'd it make the censors' cut?"

Nice. A fellow traveller. A smile moves across my face. It feels good. "Right? Guess there is some justice left in this world after all."

Their eyebrows draw together in confusion. "What are you talking about?"

I respond, "He was a brilliant scientist and human rights advocate, you know. Not many people know that."

There's a pause while they give me one of those head-to-toe, judging looks. "Whose human rights did he advocate for? His own? Completing an MD doesn't make you a scientist. He didn't even use that degree. He was basically an opportunistic novelist who convinced the second President Bush that global warming wasn't real... setting climate change policy back by decades."

The rivers of sweat start to flow faster under my

biceps. Fight or flight. I need to make a decision.

"*State of Fear* taught laypeople to assess the merits of scientific argument. Not everyone is born into privilege, you know. We can't all go to private school and we both know that public schools only provide politicized curriculum. Michael Crichton was writing for the rest of us."

"He was basically an opportunistic novelist who convinced the second President Bush that global warming wasn't real."

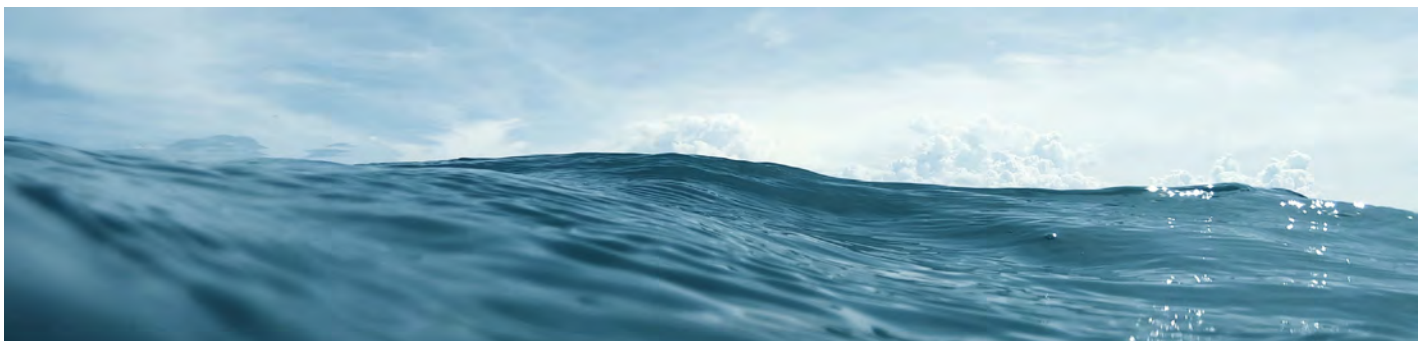
They take a breath and a step back, nearly touching the book drop. Their face is now far from friendly. "His one-sided arguments against a team of the world's most celebrated scientists empowered the willfully ignorant, restricting our freedom of movement and choices about how and where we live."

How dare someone not even skilled enough to use a loaner book drop properly hurl such loaded language at me! Being accused of stupidity by someone so incompetent causes a vein in my right temple to tap at the thin strip of skin tasked with keeping it in place.

Straightening my spine, I take a slow, deep inhale and share Crichton's teachings, "As for the IPCC, look up Gell-Mann amnesia effect. And it's clear to me that you've embraced environmentalism as a religion and need help to get out of its clutches. There are support groups that can assist with that. You'd best find one."

They shake their head, in obvious defeat. "Wow."

I turn and make my way back to the condo. Next time I'll pay for the ebook. Going outside is just too dangerous.



WHERE THE WORLD MAY WIND UP

Bacigalupi's Hugo-winning novel offers uneasy answers

By Juan Sanmiguel

Paolo Bacigalupi spent several years laying the groundwork for *The Windup Girl*. One might argue that the post-climate-change setting is one of the key elements that has ensured the book continues to resonate.

It is the same world in which his Hugo-finalist novelettes "The Calorie Man" (2007) and "The Yellow Card Man"

(2009) were set. This is a post-fossil-fuel world. Global warming has redrawn the world map. Wound springs serve as energy-storage devices. It is a world where partially invisible genetically modified animals roam the city streets. Mega-corporations have gained an incredible amount of power through genetically engineered food. These corporations, called Calorie Companies, maintain their power with private armies, and political maneuvering. Their bioweapons have created blights and wiped out natural crops.

Thailand has more freedom from the Calorie Companies than other countries. There is however friction between the Thailand Trade and Environmental ministries. The Environmental Ministry is tasked to protect Thailand's environmental sovereignty. The Trade Ministry is willing to do business with anyone no matter what the long-term consequences. Anderson Lake, a Calorie Man from the United States, discovers that Thailand still has some natural foods. He is determined to find the seed bank for these foods for his company AgriGen. One of his workers Hock Seng, a Chinese refugee or Yellow Card Man, is trying to restore his fortune which he lost when religious fundamentalists took over Malaysia. Seng will steal and deal with anyone to achieve his goal. Anderson meets Emiko, a genetically engineered person or windup girl from Japan. Originally designed to be a secretary for a businessman, Emiko was abandoned in Bangkok when she became obsolete. She is forced to be a sex slave at a nightclub. Emiko hopes to escape to a colony of New People like herself. Kanya is a member of the Environmental Ministry. Her commanding officer Jaidee Rojjanasukchai attempted to shutdown smuggling in

Thailand. This interfered with the Trade Ministry's and the Calorie Men's schemes. Jaidee is killed but becomes a martyr to his men. Kanya is torn since she was acting as a double agent for the Trade Ministry. She feels conflicted despite the fact she was not directly connected with Jaidee's death. Jaidee continues to advise Kanya when the open warfare between the Environmental and Trade Ministries breaks out.

The world of *The Windup Girl* is a dire place. Bacigalupi makes us feel the heat, poverty, depravity, and desperation in this world. There are no easy solutions. The world is not going to be miraculously fixed by the end of the novel. Many people do not like this and feel the book is too pessimistic.

*Bacigalupi makes us
feel the heat,
poverty, depravity,
and desperation.*

David Gerrold once said that good science fiction should make one feel a bit uncomfortable. *The Windup Girl* does this quite well. Bacigalupi is making the reader face some of the worst-case ecological scenarios out there. It is legitimate to argue whether Bacigalupi's economic and ecological models are valid. What is wrong is to call the book pessimistic.

At the end of the novel, Emiko, Kanya, and Seng take charge of their own destinies. Kanya helps Thailand ensure its ecological independence. There is a price for this, but it is better than being exploited by other powers. Emiko is free for the first time in her life and shows more compassion than her former owners. This is especially satisfying since she has been forced to some heinous actions for her owners. Seng has a chance for a new life outside of Thailand.

The end of the novel reminds me of the end of Philip K. Dick's *The Man in the High Castle*. In that book the world is still a frightening place (an alternate world where Germany and Japan won the Second World War) but the characters are more empowered than they were at the beginning of the novel.

It's because of the use of setting and feeling of empowerment that *The Windup Girl* was my top pick for the 2010 Hugo Award for Best Novel, an award it shared with *The City & The City*. Bacigalupi has remained a powerful voice in climate fiction.

SONGS OF A DISPOSABLE EARTH

***Childhood's End* doesn't mean burning down our home**

By Jason Sanford

I was an indifferent English student in high school, caring more for science fiction than the required works assigned by my teacher. But one day my teacher surprised me by lending me a copy of *Childhood's End* by Arthur C. Clarke.

He said the novel was a classic from the Golden Age of Science Fiction and that I might enjoy its depiction of our possible future. And I did. I loved the all-powerful alien Overlords watching over humanity as we transitioned to the next phase of our existence.

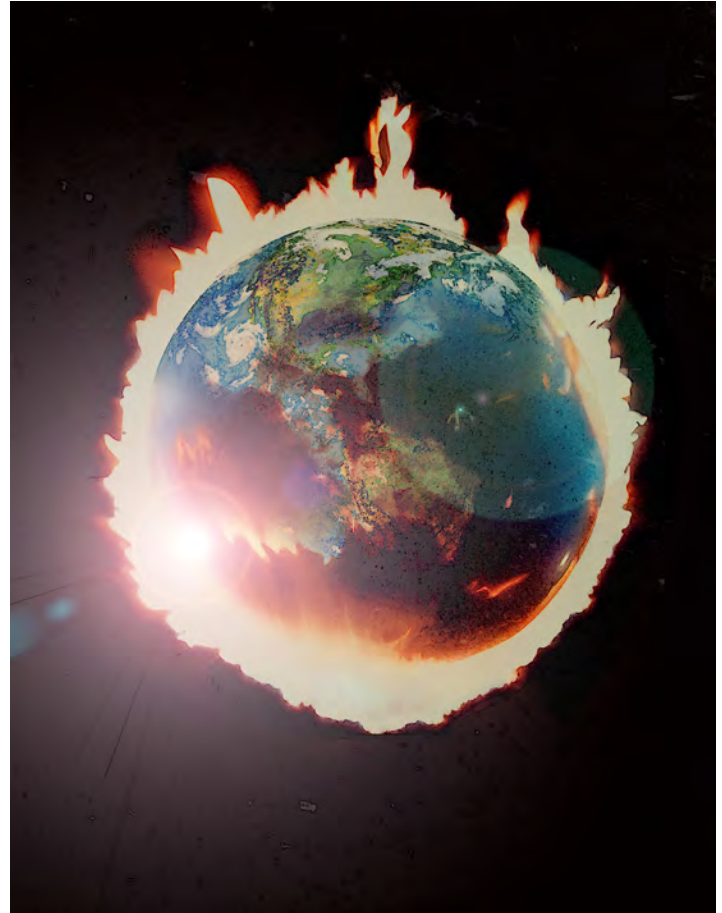
Loved it, that is, until human transcendence literally disintegrated the Earth.

I've never accepted that part of *Childhood's End*. Why did humans have to destroy Earth to embrace the greater universe? Why did all other life on our planet need to die merely for humanity to transcend to a more advanced way of living?

As I grew older, I realized this was a common science fiction trope from the Golden Age onwards. In some of these stories this means the total destruction of the Earth as a handful of humans escape, as in *A Canticle for Leibowitz* by Walter M. Miller Jr., and *When Worlds Collide* by Philip Gordon Wylie and Edwin Balmer.

In others, such as *Pebble in the Sky* by Isaac Asimov and *Do Androids Dream of Electric Sheep?* by Philip K. Dick, Earth is a largely uninhabitable radioactive ruin with a humanity that has either already moved off planet or is in the process of doing so. And in yet other works, such as Robert Heinlein's *The Moon Is a Harsh Mistress*, our home world must be attacked and subdued so humans can escape what a critique of the novel in *Jacobin*¹ called the "resource-sucking parasitism of Earth and its welfare dependents."

Some of these stories end on a hopeful note, as in *Pebble In the Sky* where there's talk of returning



Earth to an uncontaminated state. But the overall theme across these classic works of science fiction remains: for humanity to reach our true destiny we must discard an Earth we've outgrown.

It's almost as if science fiction from the Golden Age onwards taught people that Earth was merely a disposable stepping-stone in our journey to the stars.

Some of this can be tied in with beliefs such as American exceptionalism, colonialism, and manifest destiny that informed so much of the science fiction in the United States. You could also make the case that the science fiction genre was ironically mirroring the beliefs of religions like extreme forms of Christianity, which urge people to focus on the hereafter instead of taking care of the world around us.

But no matter where this theme originated, the message that Earth is disposable and can be discarded

¹ <https://jacobin.com/2022/05/musk-tesla-robot-heinlein-libertarianism-technocracy>

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DISCO AND THE RISING TIDE OF CLI-FI

The 1970s saw increasing concerns about environmental issues

By Paul Weimer

The 1970s get a bad rap as a “lost decade,” in which America declined (and the table was set for figures like Reagan to make it “Morning in America”). This decade was also a period of innovation and exploration in science fiction, with seeds scattered across the landscape.

But in the 1970s, some of those seeds didn’t quite germinate, yet if we look we can see in them groundwork for more modern views about various concerns. I speak here of the environment, and particularly of climate change. Even in the early 1970s, talk of climate change was in the air. But those voices were not heeded.

Why did this happen? Perhaps because of the louder voice of Paul Elhrich and *The Population Bomb*. That was the clarion call that got sounded, and resounded, over and over again. Overpopulation is an idea that gained far greater traction, among the general public, even to the modern day. Of course, despite numerous famines, the world did not descend into a hellmouth of overpopulation-driven deprivation. But this idea may have caused climate change to stagnate in film, print and consciousness.

Nonetheless, some works sounded warnings for other issues. In the 1970s, several major SFF novels and movies touched on climate change and provided ur-texts for more modern pieces, as well as the environmental movement, to draw upon. While the aforementioned Elhrich concerns were the major fugue theme of the 1970s, and it overwhelmed, both in execution and failure, other voices, the voice in the fugue of science fiction concerned with the near future, climate change was indeed one that we can pick out and examine.

Kate Wilhelm’s *Where Late the Sweet Birds Sang* (1976) tackles a Virginia where not only are the remnants of humanity dealing with the day-to-day challenges of

living after a climate and ecological apocalypse, but a biological one as well — the ecological apocalypse has sterilised the remnants of humanity. The struggle to perpetuate humanity via cloning proves to be a fraught one, and the novel’s overall message that there are points of no return for species and societies are a grim clarion call to action.

The hand of climate change in these novels and movies dries up, desertifies, and degrades the land, causing water and food instability.

No Blade of Grass (1970), a film based on the John Christopher novel, uses climate change and pollution in an indirect way — both combine to allow for the emergence of a virulent pandemic, which rapidly collapses civilization in its wake. The stress that climate change puts on global ecosystems is brought into stark relief in the movie.

While *Soylent Green* (which depicts a 2022 New York City that has 40 million people) is part of

that dominant theme, a careful reading of the text and watching of the movie shows that people are concentrated in cities, rather than being wall-to-wall across the country. The lack of resources depicted in the book is largely because crops and ocean life are dying from the greenhouse effect and climate change. The handmaiden of climate change — instability in water supply — is subtly shown in the movie, and is a greater theme in the novel.

John Brunner’s *The Sheep Look Up* takes the theme of clean water supply instability due to climate change and pollution even further, making it into the major theme of his novel. Entire seas and river deltas are either dried up, or irretrievably poisoned. The right-wing American President appears only able to offer useless and weak platitudes in the wake of this ecological crisis.

Silent Running doesn’t take place on Earth, but rather on spaceships that carry the remnants of plants and animals otherwise extirpated from the Earth. In the movie, these spacecraft refuges for plants and ani-

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CLIMATE TOOK BACKSEAT

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mals come under threat from short-sighted, corporate decision makers, and a lone botanist must fight their destruction. Although this may not at first seem to connect to climate change on Earth in the 1970s, the corporate and governmental apathy and abandoning the project of reforestation is in-line with the responses or lack thereof to climate change. The novelization of the movie (by Harlan Thompson) has flashbacks of Earth not seen in the movie, making the desertification of the planet clear and vivid. It makes the abandonment of the reforestation project even more striking and poignant.

Bringing up the end of the 1970s, the first two *Mad Max* films show an apocalyptic vision of climate change. These two films, set in Australia, depict a world that has fallen apart due to resource depletion

but more is going on here. Why the desert landscapes? Why does the story take place in a bleak wasteland? That is because the world has succumbed to climate change and desertification as well as resource deprivation.

The settlers in the original *Mad Max* are looking for a mythical Northern paradise, it is implied that this is because their original homes are untenable.

The hand of climate change in these novels and movies dries up, desertifies, and degrades the land, causing water and food instability, the necessity for migration and exodus, and making any response to other pressing social problems impossible. These stories in the 1970s showed an understanding of climate change, and provided warnings not well-heeded at the time. Many of these works stand as clarion calls that continue to resonate today.

THE SIREN SONG OF SF'S OTHER WORLDS

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echoed across the genre. And this influence is sadly still being felt today.

Elon Musk says *The Moon Is a Harsh Mistress* is one of the books that inspired his life.

The novel certainly helps explain his focus on colonizing and terraforming Mars. Musk worries if we stay on Earth we'll either kill ourselves off in World War III or an asteroid will destroy our world².

It's almost as if Musk is reliving the science fiction novels he read while growing up. As if he wants Earth to be destroyed to justify his science fiction dreams.

The genre has, of course, presented other visions and futures where the Earth isn't treated as disposable, especially in International, New Wave, Feminist, and

2 <https://www.gq.com/story/elon-musk-mars-spacex-tesla-interview>

Afrofuturist works. But it still feels as if science fiction has convinced too many people that our planet is disposable. That eventually humanity's childhood must end and we'll move on, discarding what's no longer needed.

If we want a true childhood's end, we must work to solve these problems.

itself.

If we want a true childhood's end, we must work to solve these problems. Even as we reach into space we must also find ways to take care of our home planet.

The future of Earth and humanity isn't a zero-sum game. After all, what kind of child announces their ascent into adulthood by burning down the home that nurtured them?

But this belief is precisely the worst one humanity could have. We currently face multiple planet-threatening crises, from global warming to mass extinctions of species to massive pollution. These crises threaten not only humanity's survival ... but the Earth

PONDERINGS

By Victoria Carter

Ponders, are you thinking?

Ponders, what are you thinking?

Ponders, why do you say “it is what it is?”

Ponders, why do you think “it’ll just work itself out?”

Ponders, why do you think these problems will end up solving themselves?

Ponders, why are we collectively content on passing down our large-scale problems for
your children to deal with?

Ponders, why do you think they’ll be better off in dealing with these problems as opposed
to us dealing with them now?

Ponders, why do people tell me to just find a husband, get married, have 2.5 kids and a
dog named Sparky, because I ponder too much...

PARASITES IN PERIL

Climate change threatens species, shall we mourn the lost worm?

By Collin Horn

In 2015, the Bramble Cay mosaic-tailed rat was given the infamous title of the first, but almost certainly not last, mammal driven to extinction primarily by anthropogenic climate change by the International Union for Conservation of Nature (Waller et al. 2017). Increased flooding and decreased vegetation of its small island habitat off Australia as a result of Anthropogenic climate change drove its demise. Not an exceptionally charismatic species, it is tempting to not look any closer at the loss of this small rodent. But each species is a world unto itself, hosting other species that often play out their entire lives hidden from view. This includes species of mutualistic microbes, as well as parasites persisting by living on, between, and within the tissues of their larger hosts.

Global warming is expected to contribute to the decimation of biodiversity. We already bear witness to this in countless obvious ways, captured in famous images of desperate bears on dwindling sea ice, fire-charred forests, and devastating floods.

Parasitism is one of the most common lifestyles among animals (Dobson et al. 2008). Remarkably, about half of all animal and plant species may be parasites forming long-lasting close relationships with other species, relationships in which the parasite benefits at the expense of their host. Many of these relationships are very close, with the parasite only able to survive in one specific host or a few closely-related ones (Dick 2007). When a species goes extinct, it's likely that one or more dependent symbionts (either a cooperative mutualist or parasite) are lost as well. If we had turned an eye to the complex biology within extinct species, how much more biodiversity would we have found — and how much has been lost before we realised it?

Perhaps you might wonder why we should care about the disappearance of parasites and germs that we usually associate with disease and disgust?

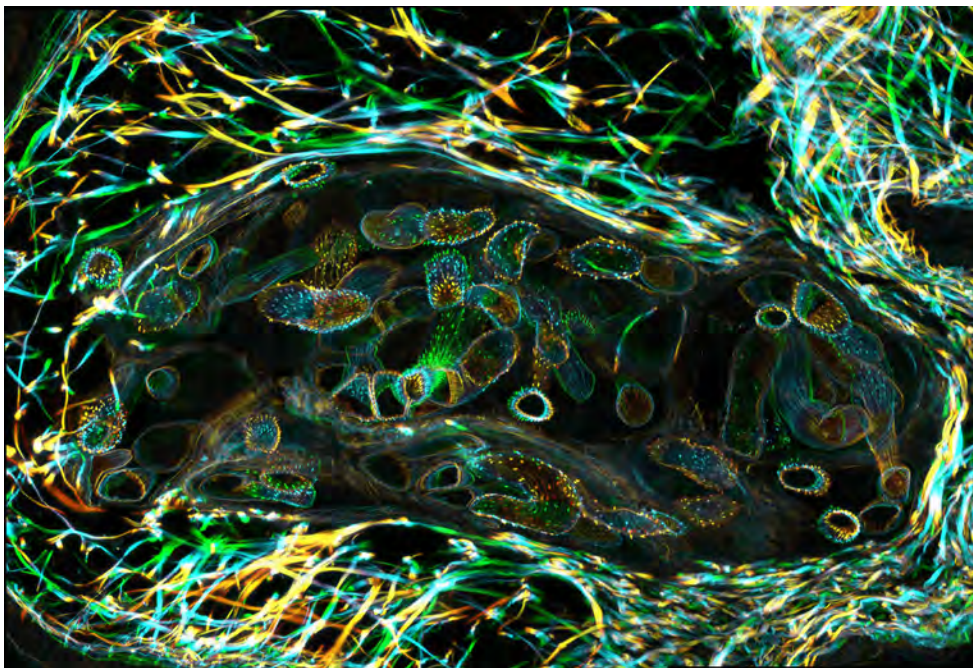
Scientists increasingly recognize that parasites have important ecological roles beyond infection. Lafferty and colleagues show that parasites can be important parts of food webs, and make these trophic connec-

tions more symmetrical (2006). The presence of them can help maintain ecosystem health by increasing the productivity of systems as well as biodiversity when specialised parasites help prevent one species from becoming too dominant (Hudson et al. 2006). On the microscale, bacteriophages (viruses of bacteria) are responsible for controlling marine bacteria populations. Given their often complex life cycles, parasites as a group may be particularly vulnerable to climate change, with up to one third of parasitic species at a risk of extinction (Carlson et al. 2017; Cizaukas et al. 2017).

It's not all doom and gloom for some parasites though. Environmental stressors can compromise the immunity of potential hosts, making it easier for parasites to establish and reproduce. Such stresses may have played a role in allowing a novel parasite to establish in Antarctic fish populations, as reported this year (Desvignes et al. 2022). Changing temperatures directly stress fish adapted for some of the coldest marine waters, but also impacts water conditions when ice melts freeing fresh water.

Science fiction has taken up some of these themes. The concept of a parasite or virus frozen waiting to be freed by melting ice and causing catastrophe has appeared both directly and indirectly. Although extraterrestrial in origin, the creature from *The Thing* infects and consumes victims from within, turning them into vehicles to spread itself. These stories hyperbolize the genuine concern of frozen pathogens in the soil and buried dead melting along with not-so-permafrost (Stella et al. 2020). One potential pitfall, however, is these narratives, while dramatic, understate many more probable means by which climate change puts humans at the risk of infection: the destruction of animal habitats driving closer human-animal contacts; flooding and failing infrastructure leading to contaminated water; and warmer temperatures increasing the populations of common disease vectors like mosquitoes (Mora et al. 2022).

Where science fiction has been less explorative is asking us to think about the loss of parasites as a genuine loss of biodiversity. Speculative fiction has asked us to imagine worlds missing all kinds of life, including



Larvae from the parasitic worm that causes schistosomiasis.
(Image CC Licence via NIH Image Gallery)

versions of Earth rendered nearly unrecognisable by climate change. It has also asked us to empathise with all types of being: including the alien, artificial, and animal. However, to the best of my knowledge none have asked us to interrogate if losing parasites, both sylvatic and human, is a morally or philosophically relevant loss. As more people report feeling deep and lingering “Climate Grief” (Cunsolo et al. 2020), it may be a worthy challenge for science fiction to ask if this grief can include some space to mourn the worm.

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MASSIVE MOMENT FOR CLI-FI

A decade ago, one comic paved the way for climate fiction in comics

By James Bacon

The Massive was a bold move. Creators Brian Wood and Kristian Donaldson, who'd had success with *DMZ* at Vertigo, brought out a fresh post-apocalyptic comic from Dark Horse. It had its own look and style — a very designed look to the first cover, and one immediately got the sense that a catastrophe had occurred even though there was a gentle yet detailed and insightful introduction to our characters.

The global catastrophe wasn't the horror of zombies — which were at the height of popularity when the comic book was published in 2012 — or science fictional alien invasions, or a war with nukes.

The catastrophe was a cacophony of environmental events. Random occurrences, that on their own would have been manageable and dreadful, but in quick unrelated sequence, sufficient to destroy worldwide networks and economies. These events — which we might consider as warnings if one-off — create a cascade and even inundations literally as well as metaphorically for the human race to face. And, as one might expect, things fall apart.

Flooding, burning, dying are daily news occurrences at the moment (2022), and we know ten years after *The Massive's* publication that there is huge consensus about the matter, while as I type we watch the petrochemical powerful nations of Saudi Arabia and Russia block efforts to address solutions to the problem.

The comic speaks to many things, and while the reader is left guessing in a thoughtful way, we are not given reasons why these horrendous catastrophes have occurred, the timeline in the first issue is a shocker, but we are able to make level deductions that we have misused and abused the Earth, to a point where we have broken it. One does not expect oil fields to explode or wind farms to be torn asunder, but as the Earth convulses it destroys all types of infrastructure, while the ice caps melt.

The titular Massive is not the event, but a ship of the environmentalist group Ninth Wave, which has gone missing, and its smaller compatriot from the Kapital is seeking it, hoping it has survived. On board the Kapi-

tal are Callum, Mag and Mary who provide the reader with three very different perspectives. For instance Mary has a very sympathetic view of muggers, giving a fair but difficult understanding to their plight taking on board their situation but in a nuanced way pointing to their own sense of entitlement and expectations.

Brian Wood spoke of the science and was frank when he said 'the science will be fuzzy at times, but the focus of the story is not on those details specifically, but more about how the characters react to them.' These characters are brilliantly portrayed and have unique characteristics although one often feels slightly disconnected from other potentially interesting players. Wood works hard to build character and identity, we learn much about them and it is both a fascinating and interesting story. The environmentalists have very



Image via Goodreads

different backgrounds, and it is fair to say that they include one-time terrorists and mercenaries.

I like how Brian Wood depicts the problems and survival of different parts of the world, which is something a maritime adventure traditionally allows one to do. This lets the reader see how things are progressing, how humans will build systems where they can, and try and deal with the situation they are faced with. The focus is a group who are not saying 'we told you so' but who are trying to work out what has happened to their ship, and we discover on their journey, what has happened more generally.

Wood said he was looking for an 'action-driven socially conscious thing set in a speculative future... I went to environmentalism, end of the world concepts, and my persistent theme of identity and history,' and he definitely sets out an adventure, with everything facing the crew, from a fantastic version of pirates to sharks!

The story progresses well, but the answers are not always ones the reader may like, the situation not so much resolves, but readers do find an ending, and in many respects it may not be satisfactory: happenstance, calamity and coincidence play a stronger part than one might like as the story rounds off, perhaps

jarring the reader unpredictably, but the journey is definitely worth it.

At the time it was published, *The Massive* was a Vertigo comic and attracted limited interest. But perhaps comics and comic book readers have become more interested in climate issues; this year I was surprised to see the cover of *Superman: Son of Kal El* #7, not because there was a school strike for climate – and I highly recommend the Tom Taylor and

Cian Tormey and Ruairí Coleman series – but because, for a moment, I thought it was drawn by Kevin O’Neill, the angular look, the lines and tentacles, yet it was a fabulous cover by John Timms. Some themes are pervasive.

As I type, we watch the petrochemical powerful nations of Saudi Arabia and Russia block efforts to address solutions to the problem.

ANNOTATED ATLAS OF A DYING WORLD



APOCALYPTIC RADIO

By Nicolas Pallaris

"Holding up?"

"Like well-worn stitches."

"Better than not. Chin up. Smile for the camera."

"Clown off! ...Though, I suppose it made me feel an inch bit better."

"We're not on air, are we?"

clack

tttssshhh

"Test! Test! Hellooo, listeners!!! On behalf of a dwindling number of sponsors, we welcome you to our show. I'm Jim Kartinan..."

"...and I'm Karrie Bright..."

"...your late-night radio hosts on 1299 Apocalyptic Radio, bringing you all the latest hectics and skeptics on a tragic comedy of epic proportions where you are next."

"Jimothy. Don't scare our listeners so much."

"I told you not to call me that on air."

"Why not? I think it's a cute mashup of your first and middle names."

"Well, I don't like it."

"Well, too bad."

"..."

"..."

"In all serious, now that we're talking, I need to ask: How was last night?"

"Terrible. West Beach Dam cracked at twilight, and the local supermarket was washed away by dawn."

"Your house okay?"

"Still 12-inches underwater. ...It makes me want to cry."

"The weather's getting more and more unpredictable. My great-aunt who lives over in Venezuela turned one hundred this year, with Alzheimer's. Every day I'm getting phone calls. The entire cousinhood can't keep those spry old bones from popping off. Just yesterday they found her throat-deep in sewage."

"That can't be sanitary."

"Alejandra has her old wounds from the army. Juan's been sickly from childhood."

"We're all tired."

"Your mother and father are getting up in the years. Considered moving somewhere sunny?"

"Where? Arizona's dryer than a crumpled raisin."

"What about up north to Canada?"

"Potato, potato. Why trade one hell off for something worse? Since dad's been stuck in a wheelchair—"

"Paraplegic because he got caught by the broadside of a floating truck."

"It's not easy to travel even if we wanted. Hubs and mums want to live out the last of their days in their marriage home."

"It's not easy is it."

"Definitely, not easy..."

"..."

"..."

"Do you want to talk about things close to home?"

"I think we hear enough about things close to home."

"What about traffic?"

"Well, get on with it, Jim."

"Having me bite the bullet then? Gladly. Everyone have their windows shuttered? A Category 4 storm's rolling through our lovely town of Lakeland, Florida."



"The tenth one this week..."

"And more for the season. Latest we heard; high waves struck the east shores of Fukushima, Japan."

"10 feet? 20 feet?"

"Kid's numbers, Karrie. 100 feet!"

"Again! First with 2011. No more radioactive leaks, I hope?"

"Lessons were made. Doesn't change anything for those of us stuck close to water – which, I suppose by now, means all of us. Make sure to keep your heads safe and dry outside of Sylvie's path."

"I'll never understand why we started anthropomorphizing hurricanes."

"Road closures on the south end and Doherty. At this point you might be better off driving a boat than a car, with how graciously the sea lanes have filled up."

"Geez... Wish they would have taught that back in university, though I'm not sure how many of us would have listened. We're at twenty-five."

"Bandwidth declining, huh. It's time we brought on our local listeners. Karrie... do you think you could take the lines?"

"Beeswax...! I'll get right on it. I swear, with so many bright and flashing lights, you'd think we were knee-deep in an operation room filled with blood."

"I guess with all the ups and downs in electricity, it isn't only the power lines that got their wires crossed."

"Keep those shitty puns yourself, Jimbo! Alright, we're connected. Listener number 1, can we get your

name?"

"Hello... Can you hear me?"

"You're cutting in and out. Can you speak a little louder? That's something of a rain."

"Sorry... I've tried reaching 911, but I can't get past a busy signal."

"Are you crying? Please, calm down first. Everything's going to be alright."

"That's right, we're listening. If we're listening others will be able to hear you."

"Thanks... It's just been so bad! Kevin's stopped breathing and Elise's foot is caught in the grate..."

"Could you tell us where you are?"

"I don't know! I'm not sure! We were just running for shelter, and I panicked..."

"Deep breaths. In... Out..."

"In... and out..."

"Thinking a bit clearer?"

"A little bit... maybe."

"Jim, here. Any buildings or landmarks to work off?"

"We were running pretty hard, and the storm clouds were getting pretty dark – thunder maybe. I heard trains rolling off the tracks. I think we're in some sort of drain!"

"What about roads?"

"We weren't travelling on the roads, just out in the

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CHOOSING VAN GOGH

The human cost of climate change is incalculable

By Oghenechovwe Donald Ekpeki

Recently in Nigeria, millions of lives were upended by flooding. Displacement and starvation followed, in addition to wholesale loss of lives. Something similar also occurred in Pakistan. Flooding led to massive loss of lives as well as displacement of millions and also starvation.

These two regions are not alone. Places like Bangladesh, Northern India, Afghanistan, and broad swathes of the African continent also had to deal with climate disasters — hundreds of millions of people, going on a billion children, across South Asia and Africa.

People in these regions have been faced with heat-waves, as temperatures climb, starvation, diseases, homelessness, loss of property and livelihood, displacement as inhabitants of these regions struggle bitterly for their lives and wellbeing.

Activists from these regions have struggled to draw attention to these issues, to elicit global support and assistance as their homes are ravaged by the climate scourge. One such example is science fiction writer Usman T. Malik, who raised thousands of dollars in days to assist his climate ravaged home, Pakistan. Other science fiction writers and activists on the African continent — Somto Ihezue of Nigeria and Tlotlo Tsamaase of Botswana among others — have also lent their voices to

the issue of environmental and climate degradation through their literary works.

While all this was going on, two climate activists in the United States, Phoebe Plummer and Anna Holland with the Just Stop Oil group threw tomato soup on a Van Gogh painting, then glued themselves to

the wall adjacent to the painting. All this they did in an attempt to draw attention to the spate of climate disasters ravaging people in vulnerable parts of the world.

The painting is considered priceless, though, what that means is up for debate. There was much outrage at the action of the activists, even though being protected by a glass covering, the painting was unharmed. This is more than we can say for the hundreds of

millions of people whose lives are worth far more than the 'priceless' \$80-million-painting.

Those largely responsible sit in their homes and tweet their outrage at the non-existent danger queer activists pose to Van Gogh paintings.



The National Gallery of the United Kingdom where the painting was housed, received sponsorship from the Shell corporation, one of the largest fossil fuel companies in the world. And while the museum was forced to end its sponsorship, the actions of the activists were met with wide criticism from an incensed public.

Much of the conversations that went round were centered not on the far more valuable lives endangered by a fossil fuel-sparkled climate crisis, but on the lifeless and unharmed Van Gogh painting.

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Nigeria and Pakistan and a lot of the most vulnerable countries are nowhere on the list of countries with the highest energy consumption and carbon footprints. These nations like Nigeria and Pakistan continue to bear the brunt of the climate crisis sparked by larger nations like China, the United States and others who's energy consumption tops the list of countries with the highest carbon footprint.

And while children and innocents struggle to eke out an existence as their homes are washed away in the tides of water and disconcert, those largely responsible sit in their homes and tweet their outrage at the non-existent danger queer activists pose to Van Gogh paintings.

One may wonder the role of the average citizen in checking the climate crises, since it's exacerbated by

the actions of mega corporations and industries. The connection is governments regulate these industries. Citizens vote for politicians who make up the government, so one can draw a line from the decisions and actions of the least person on these climes where there is heavy industrialization and unchecked energy consumption, to the policies of their politicians and governments and the actions of their corporations.

You — yes you — may hold the key to the life of a starving, drowning child on the African continent or South Asia. And your outrage, your arguments may be choosing a lifeless painting over the children and persons that could create a thousand more of those paintings. A hundred thousand Van Goghs washed away in the flood waters of disconcert. So as you pick up your phone to lash at the actions of activists, or go out to vote in your elections, remember this, even in your love of art, that choosing that child, is choosing Van Gogh.

Apocalyptic Radio

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grass, between the trees for a little fun—”

“I think we’ve all done that at that age. Looking for a place to hide our beer bottles...”

“It just came so fast! We didn’t think it was real!”

“Hon, remember those deep breaths.”

“Update just in. Hurricane Sylvie has officially been upgraded to Category 5. I repeat, the storm surge has been upgraded to Category 5!”

“Water’s deeper... I don’t know what to do...”

“We’ve got emergency on line 2. What did you say your name was?”

“Haley... Haley Brown...”

“Okay, Haley. Keep talking. We’ll make sure you and your friends are taken care of. Haley... Haley!”

“I... hear you... properly...”

“This can’t be happening. Jim! What about the lines.”

“Under these wind pressures...”

“Did you hear a crack?”

“I didn’t hear a crack.”

“Please, tell me this is a nightmare! Look, Jim, the antenna’s tearing off!”

“Karrie, calm down. Stay away from the windows.”

“The connection’s dropping!”

“Haley, can you hear us?”

“...”

“I don’t think she can hear us. Come on, let’s get our heads under our desks. Karrie, keep yourself together!”

“Don’t tell me what to do Jim! Oh my god... what’s that?”

“Shh... It’s a tree trunk, Karrie. Just a tree trunk.”

“It’s getting bigger, Jim! We’re all going to—”

crack

tttssshhh

THINGS FALL APART, IT'S SCIENTIFIC

Vonnegut's climate-ish fiction

By Christopher J. Garcia

Like all great author's oeuvres, Kurt Vonnegut's environmental fiction can be boiled down to a Talking Heads lyric.

"My God, what have I done?"

Truly, his writing is almost entirely about the way that humanity has created the problems of the world, and those that it hasn't created, floods and fires and volcanoes and whatnot, we only make worse. True, he's often seen as an anti-war writer, or as a secular humanist digging through the rubble of determinism for any sign of free will's leavings, but he deals with the environment with an eye as judging as he passes over either of those concepts. In fact, often all those things are tied together intimately.

This seems to be buried under terms of cynicism, though much like William Saroyan's, Vonnegut's cynicism is one of sentimentality, joy, and the milk of human kindness. These things are not as contradictory as you might think. The cynicism is reserved for those who are either playing as, with, or about God. His basic idea of humanity isn't that we're evil, but that we're babes in the wood, and it's those that try to lead us out that are the monsters.

Or, so it goes.

Vonnegut dealt with climate, though never in a way I would argue was clearly Climate Fiction. He looked at the effect of humanity on the planet on a macro level in a way that some might call environmental fiction. His messages about how we came to those moments, both cataclysmic and mere announcements, are telling when applied to Vonnegut's overall worldview, and can be seen throughout actual climate fiction.

He often used a chilling description to open sections of his works as a way to put us into the proper head space. The opening of "Deer in the Works" from *Welcome to the Monkeyhouse* is an excellent example.

"The big black stacks of the Ilium Works of the Fed-

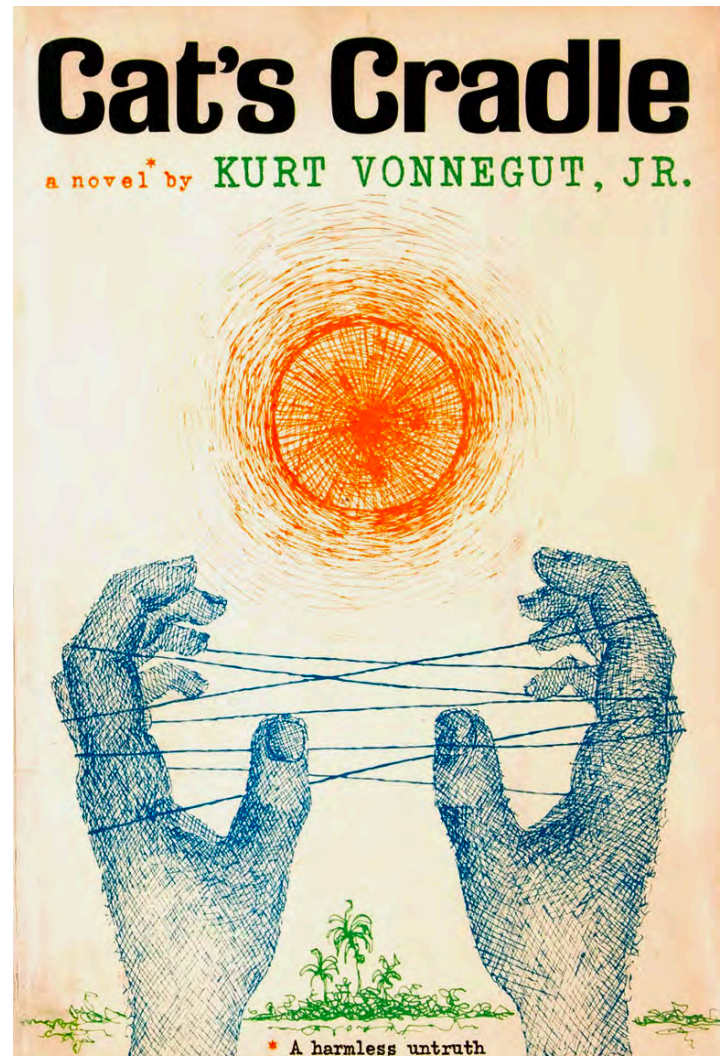


Image via Wikipedia

eral Apparatus Corporation spewed acid fumes and soot over the hundreds of men and women who were lined up before the redbrick employment office."

He establishes the sensation of that world with four words — 'spewed' 'acid' 'fumes,' and 'soot.' Combined, it is evocative of what cities in Vonnegut's *Ilium* are full of. It immediately introduces the environmental issues of the world the story inhabits. Vonnegut uses this sense notation in *Player Piano*, which also takes place in *Ilium*. He intimately ties industrialization with environmental impact, and at the same time, makes it not a major drive of the plot, but of the setting. This consciousness of the impacts fills his entire catalog.

His most obvious case of environmental impact serving

as the basis of the plot is *Cat's Cradle*, and it is also likely the best example of his overarching career-long themes. The main thrust of *Cat's Cradle* is that humanity, in all its joy and beauty and celebratory wonder, builds systems that serve specific purposes at times, but quickly grow beyond them, which ends up leading to significant problems, and eventually the fall. In this case, the fall is ice-nine, a variation of water that is solid at room temperature and every liquid water molecule it touches turns to ice-nine. The characters in *Cat's Cradle* end up being somewhat secondary to the ideas Vonnegut is playing with. While filled with Cold War paranoia and commentary on the useful-/lessness of religion, the book's impact is based on the fulfilling of non-spoken prophecies, or as some call them, coincidences, and how they are often the random breeze that sends the house of cards built by the arrogant to the ground.

The interesting thing, and why it's certainly climate fiction-like, is that ice-nine's unseen consequences are climatological, and it's the opposite of global warming. As the ocean has become ice, the environment has cooled to an exceptional level. This leads to massive tornadoes and incredible storms that engulf the planet. Actual science doesn't really bear out those effects, but Kurt was not the environmental scientist of the Vonneguts.

"The Big Space Fuck" is clearly Vonnegut's most environmentally conscious work. A short story included in Harlan Ellison's *Again, Dangerous Visions*, it tells of a completely fouled Earth where humanity is aware that it ain't gonna make it, so it launches a rocket full of human reproductive material into the Andromeda Galaxy. The sewage that has been dumped into pretty much every water source has led to the evolution of man-eating lampreys. This theme is key to most climate fiction — that we're dealing with the changes we're seeing in the climate.

The thing that Vonnegut does here is ties the fouling of the Earth to the fouling of society. As the Earth degraded, so did societal norms, with even-increasing per-

missiveness of behaviours. Clearly this ties in with the late-1960s counterculture and the state of the environment at the time. The fact that the stories take place with the Great Lakes as a backdrop is no coincidence — in the early 1970s, they were wretched.

The book *Slapstick* is Vonnegut's post-apocalyptic novel, and possibly my second favorite of them all. Here, Vonnegut posits a world where oil has run out, the Chinese have taken to miniaturization of humans to allow for less use of resources, and the world has fallen. The story centers around the life of former President Swain, but really it's about unfolding a series of ideas about dealing with human loneliness, and what led to the world where the novel opens.

And the fall, in fact, is the collapse of nations due to not having enough oil, and by breathing in the Chinese who have become so small they can be inhaled. This certainly plays with his main themes, and at the same time, is an environmental novel told as both the explanation of and endgame from the environmental disaster that ended up developing through trying, poorly, to deal with the crisis that the end of oil produced.

Sadly, I think they managed better than we will...

Vonnegut's messaging on the climate itself is not nearly as clear as his commentary on humankind and the sociopolitical systems we build. He certainly acknowledged that the environment was not only an issue, but one that needed to be addressed within the primary thrust of his fiction.

Even the small sections of environmental commentary, such as in *Breakfast of Champions*, shows how Vonnegut infused his work with climate and environmental imagery and ideas, usually as a catalyst for the stuff he wants to spend his time making us think about.

It's as if climate and environmental issues are undeniable if you decided to look at the world with any sort of depth.



Illustration by Clara Objois

IS GEOENGINEERING THE NEW DENIAL?

There's no easy way out of reducing carbon emissions

By Marshall Boyd & Stephen Griffith

Probably the most famous, and certainly the most expansive, depiction of geoengineering in science fiction is in Kim Stanley Robinson's work starting with the *Mars* trilogy, a series beloved and often referenced by tech billionaire Elon Musk.

The story takes us through several generations (or one very long generation) as colonists transform Mars from a barren, uninhabitable planet to a veritable paradise. It only takes a concerted effort of all of the inhabitants of Mars, years of regular shipments of resources from elsewhere in the solar system, technology that doesn't exist, and a lot of luck.

For those who read the books with eyes unfettered by a malignant libertarian ideology, the main takeaway is that geoengineering is a mind-bogglingly expensive proposition, potentially more expensive than reordering society to avoid the need for geoengineering. And it comes with more risks.

If geoengineering is our last ditch effort and it doesn't work, it's all over.

Robinson's thinking, the climate, and geoengineering have all evolved considerably in the decades since publication of *The Mars Trilogy*, and now the core problems of climate action are much less scientific and much more political and economic. It

is not really a matter of what we will do, as who will pay? As much as climate change is a 'wicked problem' or confounded by the complexity of our world, it could all be overcome if national leaders collectively accepted that life on Earth is more important than GDP growth. Year after year, they all refuse to pay the high cost of reducing emissions.

Kim Stanley Robinson explores climate change and geoengineering on this planet in *The Ministry For The Future* (TMFTF). In the book a horrific heat wave that kills millions in Southeast Asia leads the international community to create a Ministry for the Future under the UN that is tasked with leading the global climate response. The Ministry proposes a lot of interesting ideas and frameworks for addressing climate change, and almost provides the reader with a collection of briefings on climate change policy – to the point

Photo by Olav Rokne

that it is frequently a criticism of *TMFTF* — but as podcasters about economics science fiction it is what makes the book truly great. A nuclear submarine is stationed under the Antarctic ice sheet, and pumps up cold water from the ocean onto an ice sheet to stop it from melting and triggering sea level rise. This works in the area it is deployed but to protect the whole ice cap, and meaningfully halt sea level rise, it would require a fleet of nuclear subs greater than the number collectively held by the world's navies today. A geoengineering solution like this demands all the same kinds of global organizational and funding structures that emission management needs but on a tighter timeline and with less margin for error. To make matters worse, the longer we wait the more we lock in reliance on geoengineering solutions.

More importantly, Robinson explores the idea of discounting the future, that developed countries' current way of counting the costs of our actions is not accounting for devastating future impacts.

He illustrates all too clearly how we have answered the question “who will pay?”

The answer is: “The future will pay.”

The true danger of geoengineering is how it is cynically deployed to manage our expectations. To take the question of who will pay and say:... “No one.”

And when we learn we have been lazy opportunistic fools, the liars will be dead and it will be far too late. There may be some utility in geoengineering but large-scale deployment would be an act of desperation not a viable strategy.

Geoengineering projects are feasible in a local area and can make for a very nice prototype or poster at a conference but even a ‘cheap’ project using existing tech will need massive implementation. Programs like installing a global network of towers around the globe to spray sea water or constructing giant mirrors in orbit are routinely offered up as solutions that would — if built in the real world — be the biggest human infrastructure projects ever undertaken.

These kinds of projects are too big to be real. They exist mainly as justifications for greater pollution. Like Elon Musk's insinuation that hyperloop was only conceived to deter interest in high speed rail¹. Or in Neil Stephenson's 2021 novel *Termination Shock*, which

*It is incumbent on the
industrialized West
(as the top polluters)
to start to pay
down the bill
we have racked up.*

depicts a geoengineering effort by a billionaire to fill the atmosphere with sulphur dioxide; not unlike the real life actions of Russ George² who dumped 100 tons of iron sulphate into the Pacific Ocean in 2012³. It often seems as if geoengineering is capitalism's quick-fix scheme used to dissuade the public from taking necessary action.

Robinson paints a picture of the dire consequences of ignoring climate change in the opening of *TMFTF* when the population of the whole city drops dead from the heat amid a power outage. Although the events are fictional, the risk is real. When we take those lives that will be lost, climate action gains its moral and economic justification for one of the biggest undertakings in history.

It is incumbent on the industrialized West (as the top polluters⁴) to start to pay down the bill we have racked up. This is where science fiction has a unique responsibility — to call out the Hyperloop-type merchants, the geoengineering snake-oil salesmen proposals that smuggle fiction inside the veneer of serious research and to speak truth to power even in a world of fiction.

We need to think of a world where sustainability triumphs over shareholder dividends before we can even hope to implement a meaningful response. If we don't count on the future to be worth anything, we guarantee it will become worthless.

1 <https://jalopnik.com/did-musk-propose-hyperloop-to-stop-california-high-spee-1849402460>

2 <https://grist.org/climate-energy/rogue-geoengineer-dumps-iron-into-the-pacific-to-create-massive-algal-bloom/>

3 <https://www.theguardian.com/environment/2012/oct/15/pacific-iron-fertilisation-geoengineering>

4 <https://ourworldindata.org/contributed-most-global-co2>

DWELLING IN THE ANTHROPOCENE

Home is where the carbon emissions are — but that can change

By Cora Buhlert

Private homes account for a quarter of all German power consumption. So there is a large potential for conserving energy in private homes.

But, public discussion is mostly limited to patronising advice such as replace conventional lightbulbs with LEDs, turn down the heating, don't put up Christmas lights, have shorter and colder showers or maybe don't shower at all. (And yes, this was genuine advice offered by German politicians.)

However, there are better ways of conserving energy and using more renewable power in your home, which still allow you to shower as long and hot and often as you want, turn up the heating or even cool your home in summer and of course put up all the Christmas lights you want. Oh yes, and you can fuel your car as well.

I live in a fifty-year-old house that generates approximately 97 per cent of the power it consumes plus an extra chunk to feed into the grid. My car is a plug-in hybrid that is almost entirely fuelled by renewable energy. This is not science fiction, it is possible right now with technology that already exists.

Let's consider the options.

Solar Power

Most of our house's power stems from solar panels, thirty kilowatt-peak altogether. Science fiction is well aware of the possibilities of solar power — indeed, there is a whole subgenre, solarpunk, dedicated to it.

The challenge of solar power is of course that it only works when the sun shines. At night, in winter or on a cloudy and rainy day, there is little to no power. The short-term solution

is batteries, which store the power generated. We have two battery systems with a total capacity of 28 kilowatt hours.

A bigger issue is that solar power is generated mainly during summer, particularly if — like me — you live on the 53rd parallel, where the days are long in summer and short in winter. Alas, batteries don't have the capacity to store months' worth of power required for winter. Luckily, there are solutions for this as well.

Hydrogen

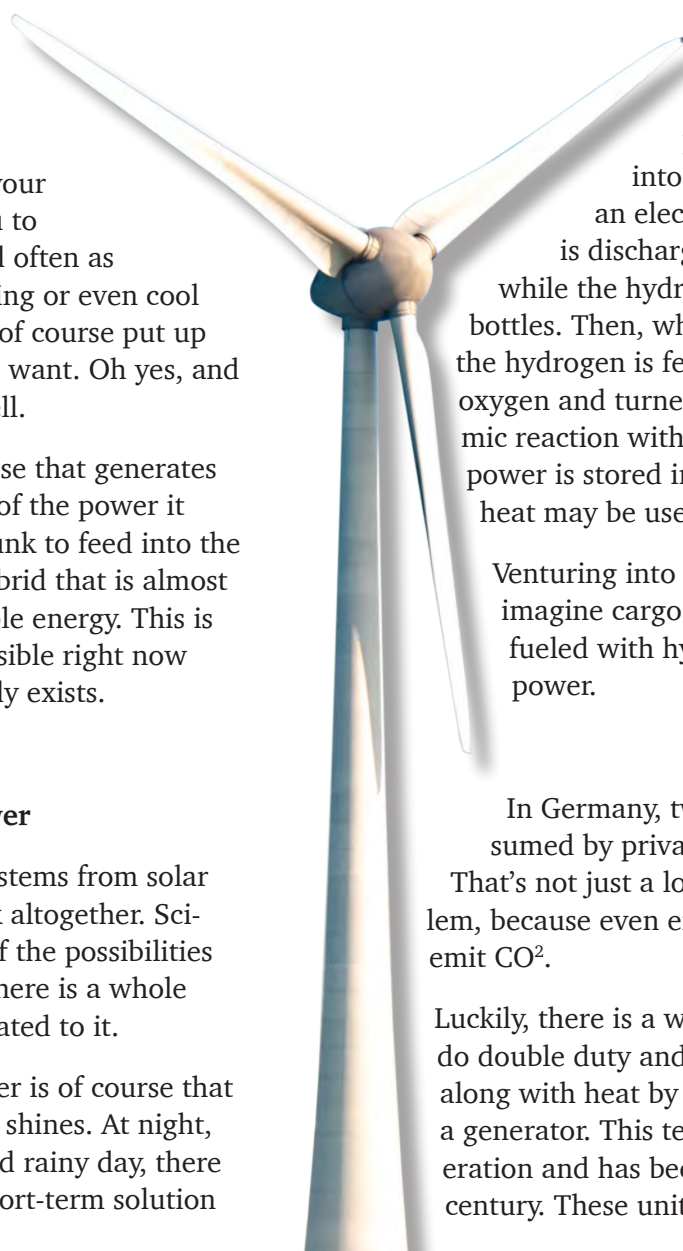
One solution is using hydrogen to store surplus power generated during summer. Solar power is used to split water into hydrogen and oxygen in an electrolyser unit. The oxygen is discharged into the atmosphere, while the hydrogen is stored in pressurised bottles. Then, when the days grow shorter, the hydrogen is fed into a fuel cell, mixed with oxygen and turned into water in an exothermic reaction with zero CO² emissions. The power is stored in a battery, while the excess heat may be used to heat the home.

Venturing into the realm of science fiction, imagine cargo or even passenger airships fueled with hydrogen generated via solar power.

Cogeneration

In Germany, two thirds of all power consumed by private homes is used for heating. That's not just a lot of power, it's also a problem, because even efficient modern furnaces still emit CO².

Luckily, there is a way to make those furnaces do double duty and generate electrical power along with heat by connecting the furnace to a generator. This technology is called cogeneration and has been used since the late 19th century. These units generate power and heat



homes via district heating networks.

Again, this is not science fiction – cogeneration furnaces have been available for more than thirty years now. We have had a cogeneration unit for fifteen years now to supply power in winter, while solar panels provide power in summer.

Wind Power

The biggest source of renewable energy in Germany is wind power, which makes up a quarter of all power generated in Germany. Wind power is the second-largest power source behind coal, but well ahead of natural gas, solar power, biogas, nuclear and water power.

When we think of wind power, what comes to mind are huge wind turbines installed either on land or at sea in offshore wind parks. Indeed giant wind turbines are such a common sight in North Germany these days that it's easy to forget that the first modern wind turbines were installed only thirty years ago. Considering how common wind power is in the real world, it's notable that it does not show up in a lot of science fiction novels. *Noor* by Nnedi Okorafor, where wind power is not an unalloyed good, is the only example that comes to mind.

There are also smaller wind turbines, which power a single home or small business. They can supplement solar power, since fall and winter are the windy seasons.

Right now, most small wind turbines are used by farmers. And indeed it is notable that the spearhead of the renewable energy movement in Germany were farmers, an otherwise

conservative demographic, since they were the first to install solar panels on the roofs of barns, wind turbines on their land and convert manure into biogas. If you go to any renewable energy event, the people

you'll meet there are mostly farmers and small business owners rather than stereotypical hippies and climate activists.

Think Small

There is no one magical emission-free power source that will save us. All forms of renewable energy have their drawbacks, but combined, they can drastically reduce CO² emissions.

Another issue is scale. Power companies in the 20th century thought big with huge power stations supplying millions of homes and businesses. The systems discussed above are small, designed to power a single home, an apartment block,

a farm or a business. One or two sustainably powered homes won't make much of a dent in overall power consumption and CO² emissions, but millions of them will. Furthermore, a decentralised network of many small power stations is more resilient and less vulnerable to blackouts.

The question is, why does science fiction so rarely address let alone extrapolate the possibilities of small-scale sustainable power generation? Does the genre prefer the apocalyptic doom and gloom of a climate change-ravaged world? Or are too many writers simply not aware of technologies that already exist?

The question is, why does science fiction so rarely address let alone extrapolate the possibilities of small-scale sustainable power generation?



Considering how ubiquitous wind power is in the real world, it is given short shrift in most SFF other than Nnedi Okorafor's *Noor* (Image via Goodreads)

HOW TO BLOW UP THE MINISTRY FOR THE FUTURE

The ‘realism’ of Robinson is its own peculiar form of fantasy

By Gautam Bhatia

Any discussion about contemporary climate fiction cannot but foreground Kim Stanley Robinson’s *The Ministry for the Future* (2020). Since its publication, the book has broken into the literary mainstream like few other science fiction novels, drawing praise from figures as diverse as Barack Obama and Naomi Klein.

Arguably, the reason for this – in the words of environmental writer Bill McKibben – is that *The Ministry for the Future* is ‘realist to the core.’ Robinson’s near-future world is grounded in the actuality of the climate crisis, and for the most part, the crisis is addressed through the tools presently available to us, albeit utilized in innovative and creative ways: law, monetary policy, international relations, and some good old-fashioned direct action. Indeed, the titular ‘Ministry for the Future’ is a body established under the Paris Agreement, an international treaty that was adopted in 2015; and its guiding principle is the legal concept of intergenerational equity.

In this brief essay, I join a minority of voices who argue that it is precisely Robinson’s ‘realism’ that makes *The Ministry for the Future* so very unrealistic. Fundamentally, The Ministry for the Future believes that technology — utilizing the tools of capitalism (positive law, central banks, the neoliberal State) — will resolve a crisis of capitalism (the climate crisis): a classic case of the hope that somehow, this time, the master’s tools will indeed destroy the master’s house. As Martin Empson argues,¹

1 <https://climateandcapitalism.com/2021/03/01/the-ministry-for-the-future/>

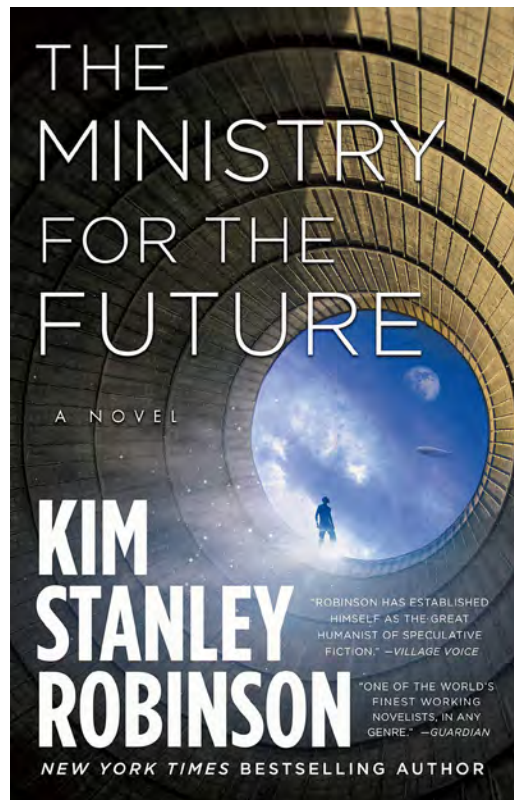
The Ministry for the Future is realist only ‘if you believe that capitalism is liberal and most capitalists actually want to make the world work in the interests of the majority. That is demonstrably untrue.’ Samuel Miller McDonald likewise points out that *The Ministry for the Future* is built upon the ‘technocratic dream of maintaining the capitalist order as it has been, with minor

tweaks to banking incentives and the magical transformation of every company worldwide into a Mondragon-style co-op without a fight.’ Both these writers observe, therefore, that the book is closer to fantasy than realist science fiction.

I will not here reiterate the arguments in Empson and McDonald’s pieces. I will, instead, add one point: the fantasies that undergird *The Ministry for the Future* can be identified clearly if we put the book in conversation with Andreas Malm’s *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming*. Malm is perhaps more famous for the recent — and provocatively titled — *How To Blow Up a Pipeline*, but it is in *Fossil Capital* that the full contours of his theory are spelt out.

Briefly, *Fossil Capital* spans a historical sweep of time that begins with the rise of steam power in

early modern Britain, and (tentatively) ends with our climate crisis of today. Malm meticulously shows how, in the late 18th and early 19th centuries, there was a contest between water and coal to become the ‘prime mover’ of the industrial age. Coal (and, thereby, steam power) won not because — as is popularly assumed — it was a function of newer, cheaper, and better technologies, but because coal-based industries made it easier for capitalists to control workers, and diminished the power of the latter at the expense of the former.



The Ministry for the Future argues that the tools of capitalism will resolve a crisis of capitalism.
(Image via Goodreads)

More specifically, the seasonal nature of water flows as well as the location of water mills allowed workers greater control over production process, as opposed to coal mining. In the result, as Professor John Tomaney notes,² ‘carbon emissions were linked to the entrenchment of capitalist social relations, hence “fossil capital”.’ Malm thus argues that our present age should not be called the ‘Anthropocene’ (a word that suggests that it is something about human nature that’s at work here), but the ‘Capitalocene.’

This one-paragraph summary is, of course, reductive in many respects, but it makes the point. It is no surprise that Malm ends his book with an analysis of contemporary China as a significant contributor to global emissions, ‘reflecting globally mobile capital’s search for cheap and disciplined labour power by means of the massive consumption of fossil energy.’³

The point, in short, is this: today’s climate crisis is but another phase in the evolution of capitalist social relations that began with the steam age. At each step, capital’s drive towards self-valorisation will ensure that solutions to capitalist crisis from within capitalism will be doomed to failure.

Now, to what extent does *The Ministry for the Future* exhibit an awareness of this? It is true that from time to time, glimpses come through, including the role of direct action (although, as Jay Blackwood points out,⁴ while ‘mass action from below forms an important thread in the process of change that he describes, it’s very much secondary to the actions of the technocrats and the bankers’). However, at the crunch, Robinson

- 2 <https://blogs.lse.ac.uk/lsereviewofbooks/2017/07/07/book-review-fossil-capital-the-rise-of-steam-power-and-the-roots-of-global-warming-by-andreas-malm/>
 3 <https://blogs.lse.ac.uk/lsereviewofbooks/2017/07/07/book-review-fossil-capital-the-rise-of-steam-power-and-the-roots-of-global-warming-by-andreas-malm/>
 4 <https://anticapitalistresistance.org/can-the-ministry-point-to-a-better-future/>

falls back to a somewhat lazy form of incrementalism: ‘money, meaning central banks, meaning the nation-state system.’ Why? Because it’s the world we’ve got, and the new order can only be built on the backbone of the old.

But, in the guise of incrementalism, this only rehearses a century-old debate that was first initiated between Rosa Luxemburg and Eduard Bernstein. As early

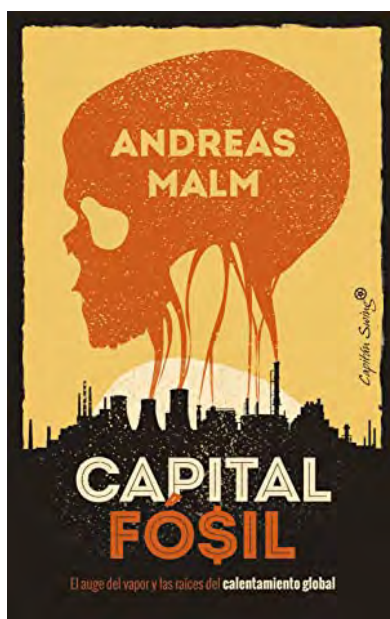
as 1900, in *Reform or Revolution*, Luxemburg noted⁵ that if reform was made an end in itself, and separated from the larger movement against capitalist social relations, it would only strengthen capitalism. *The Ministry for the Future* is very much a modern-day Bernsteinian call for reform, but it fails to grapple with the Luxemburgist critique of its priors.

Ultimately, therefore, *The Ministry for the Future* is ‘fantasy’ because it imagines a world in which the climate crisis is solved while keeping capitalist social relations (more or less) intact: as if — in the words of Marx — this is just another situation where ‘the mechanism of the capitalist production process [can] remove the very obstacles that it temporarily creates.’ But — as we know from Malm — the climate crisis is not that kind of an immanent obstacle. To remove it, we first need to radically reimagine a non-capitalist political economy.

While there are books that do that (for example, Becky Chambers’ *A Psalm for the Wild-Built* is an SF-nal rendition of half-earth socialism⁶), what we await is ‘realist to the core’ work that might imagine how we get there. *The Ministry for the Future* has value in that it shows us all the ways in which we won’t.

- 5 <https://www.marxists.org/archive/luxemburg/1900/reform-revolution/index.htm>

- 6 <https://blogs.lse.ac.uk/lsereviewofbooks/2022/05/30/book-review-half-earth-socialism-a-plan-to-save-the-future-from-extinction-climate-change-and-pandemics-by-drew-pendergrass-and-troy-vettese/>



According to Andreas Malm, we are now living in the ‘Capitalocene’ epoch. (Image via Goodreads)



COVER ART

'Wanderer Mired in a Sea of Smog'

This Fanzine's cover art was compiled by Olav Rokne, and is based on the 1819 painting by Casper David Friedrich, *Wanderer Above the Sea of Fog*. Despite its ubiquity in the dorm rooms of late-20th-century humanities students across the North American continent, there's no contemporaneous record of an artist's statement or intent with the original work.

Perhaps the lone figure looking out over a fog-shrouded landscape is contemplating the path needed to reach a summit, or their future in general. It has been suggested that the painting symbolized a repudiation of the excess wealth and influence of the nobility in the artist's post-Napoleonic German state.

Living in the early 21st century, the path behind and ahead of us has been shaped by global capitalist systems that have fought against attempts to address the unfolding climate crisis. Thus, we felt that either interpretation of the original work made it a good candidate for modification and presentation at the front of this issue of *Journey Planet*.

Rather than looking out over a celebration of pristine nature and possibility, our Wanderer is mired in waste, in burning tires, and in smog. Rather than offering Friedrich's slightly distorted perspective in which the figure looks down upon limitless valleys, our Wanderer is now looking up at yesterday's promises of cityscapes and smokestacks.

The future is still murky, but the path ahead is even more treacherous.



Wanderer Above A Sea Of Fog
by Caspar David Friedrich
(Image via Wikipedia)