

Queensland University of Technology

From the Selected Works of Matthew Rimmer

June 1, 2015

The Culture Wars of Climate Change

Matthew Rimmer, *Australian National University College of Law*



Available at: https://works.bepress.com/matthew_rimmer/238/

The Culture Wars of Climate Change

Matthew Rimmer*

In a 2005 essay, Bill McKibben considered the role of art and culture in the scientific and political debates over climate change.¹ He considered that it was a paradox that the creative communities were slow to respond to the climate crisis:

Here's the paradox: if the scientists are right, we're living through the biggest thing that's happened since human civilization emerged. One species, ours, has by itself in the course of a couple of generations managed to powerfully raise the temperature of an entire planet, to knock its most basic systems out of kilter. But oddly, though we know about it, we don't *know* about it. It hasn't registered in our gut; it isn't part of our culture. Where are the books? The poems? The plays? The goddamn operas? Compare it to, say, the horror of AIDS in the last two decades, which has produced a staggering outpouring of art that, in turn, has had real political effect. I mean, when people someday look back on our moment, the single most significant item will doubtless be the sudden spiking temperature. But they'll have a hell of a time figuring out what it meant to us.²

McKibben emphasized that earth had changed dramatically in the face of climate change: 'That famous picture of the earth from outer space that Apollo beamed back in the late 1960s –already that's not the world we inhabit; its poles are melting, its oceans rising.'³ He

* Dr Matthew Rimmer (BA/LLB ANU, Phd UNSW) is an Australian Research Council Future Fellow; an Associate Professor at the ANU College of Law; and an Associate Director of the Australian Centre for Intellectual Property in Agriculture (ACIPA). He is taking up the position of Professor in Intellectual Property and Innovation Law at the Queensland University of Technology (QUT) in 2nd Semester, 2015.

¹ Bill McKibben, 'What the Warming World Needs Now is Art, Sweet Art', *Grist*, 22 April 2005, <http://grist.org/article/mckibben-imagine/>

² Ibid.

³ Ibid.

wondered: ‘We can register what is happening with satellites and scientific instruments, but can we register it in our imaginations, the most sensitive of all our devices?’⁴

Of late, there has been a growth in cultural expression about climate change – with the rise of climate fiction (‘cli-fi’); art and photography responding to changes in nature; musical anthems about climate change; plays and dramas about climate change; and environmental documentaries, and climate cinema. Drawing comparisons to past controversies over cultural funding, this paper considers the cultural wars over climate change. This article considers a number of cultural fields. Margaret Atwood made an important creative and critical contribution to the debate over climate change. The work examines Ian McEwan's novel, *Solar*, a tragi-comedy about authorship, invention, intellectual property, and climate science.⁵ After writing a history of Merchants of Doubt, Naomi Oreskes and Erik Conway have experimented with fiction – as well as history.⁶ This article focuses upon artistic works about climate change. It analyses James Balog's work with the Extreme Ice Survey, which involved photography of glaciers under retreat in a warming world. The work was turned into a documentary called *Chasing Ice*.⁷ It also considers the artistic project of 350.org 'to transform the human rights and environmental issues connected to climate change into powerful art that gets people to stop, think and act.'⁸ The paper examines musical storytelling in respect of

⁴ Ibid.

⁵ Ian McEwan, *Solar*, London: Jonathan Cape, 2010.

⁶ Naomi Oreskes and Erik Conway, *The Collapse of Western Civilization: A View from the Future*, New York: Columbia University Press, 2014.

⁷ Extreme Ice Survey, <http://extremeicesurvey.org/>; James Balog, *Ice: Portraits of Vanishing Glaciers*, New York: Rizzoli international Publications, 2012; and Jeff Orlowski (director), and Mark Monroe (writer), *Chasing Ice*, 2012, http://www.imdb.com/title/tt1579361/?ref=fn_al_tt_1

⁸ 350.Org, ‘Art’ <http://art.350.org/>

climate change. The paper explores dramatic works about climate change including Steve Waters' *The Contingency Plan*, Stephen Emmott's *Ten Billion*, and Andrew Bovell's *When the Rain Stops Falling* and Hannie Rayson's *Extinction*.⁹ The paper also examines the role of documentary film-making. It also considers the cinematographic film, *Beasts of the Southern Wild*.¹⁰ Such a survey will enable a consideration of the larger question of whether creative art about climate change matters; and whether it is deserving of public funding.

1. Literary Works

There has been concern that creative writers and storytellers have been slow to respond to the climate crisis. In 2003, Bill McKibben lamented: 'Global Warming has still to produce an Orwell or a Huxley, a Verne or a Wells, a *Nineteen Eighty-Four* or a *War of the Worlds*, or in film any equivalent of *On the Beach* or *Doctor Strangelove*.'¹¹

In 2005, Robert Macfarlane wrote an influential, landmark essay entitled, 'The Burning Question.'¹² He considered the question, 'Where is the literature of climate change?'¹³ He

⁹ Steve Waters, *The Contingency Plan: On the Beach and Resilience*, London: Nick Hern Books, 2009; Stephen Emmott, *10 Billion*, London: Penguin Books, 2013; Andrew Bovell, *When the Rain Stops Falling*, London: Nick Hern Books, 2009; and Hannie Rayson, *Extinction*, 2012.

¹⁰ Benh Zeitlin (Director and Writer), and Lucy Alibar (Writer), *Beasts of the Southern Wild*, 2012, <http://www.imdb.com/title/tt2125435/>

¹¹ Bill McKibben, 'Worried? Us?', in *Granta 83: This Overheating World*, 2003.

¹² Robert Macfarlane, 'The Burning Question', *The Guardian*, 24 September 2005, <http://www.theguardian.com/books/2005/sep/24/featuresreviews.guardianreview29>

¹³ Ibid.

wondered whether there had been a failure by creative artists to address the pressing issue of climate change:

Cultural absences are always more difficult to document than cultural outpourings. But the deficiency of a creative response to climate change is increasingly visible. It becomes unignorable if we contrast it with the abundance of literature produced in response to the other great eschatological crisis of the past half-century - the nuclear threat.¹⁴

Macfarlane observed that, compared to the extensive literature of peace on the nuclear age, ‘There is nothing like this intensity of literary engagement with climate change’.¹⁵ He lamented that the literature of climate change was a ‘paper trail’, a ‘data stream’: ‘Climate change still exists principally as what Ballard has called "invisible literature": that is, the data buried in "company reports, specialist journals, technical manuals, newsletters, market research reports, internal memoranda"’.¹⁶ He wondered, ‘Where are the novels, the plays, the poems, the songs, the libretti, of this massive contemporary anxiety?’¹⁷ Macfarlane predicted that ‘cultural change will be overtaken by the climate’ because ‘the effects of global warming may not remain discreet and incremental for long’.¹⁸ He observed: ‘In the future, indeed, it may become hard for writers not to take climate change as their subject.’¹⁹

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

Since this landmark essay, a genre of literature has emerged in response to the climate crisis. It is worthwhile highlighting a number of the canonical works in respect of climate fiction.

In a 2011 essay, ‘The Climate Change Novel: A Faulty Simulator of Environmental Politics’, Adam Trexler considers the genre of climate fiction.²⁰ He reflected upon common themes in the area:

Over the last three decades, more than 200 novels have been written that try to imagine our future in a climate-changed world. Novels are fanciful by nature, doomsaying or utopian, and would never be confused for serious policy arguments. However, this collection of novels, taken as a whole, indicates some of the fundamental difficulties we have in articulating a just and sustainable future.²¹

His canon of climate fiction includes Cormac McCarthy’s *The Road*;²² Oxtavia Butler’s *The Parable of the Sower*;²³ Will Self’s *The Book of Dave*;²⁴ Clive Cussler’s *Arctic Drift*;²⁵ Paolo Bacigalupi’s *The Windup Girl*;²⁶ Matthew Glass’s *Ultimatum*;²⁷ George Marshall’s *The Earth Party*;²⁸ and T.C. Boyle’s satire, *A Friend of the Earth*.²⁹

²⁰ Adam Trexler, ‘The Climate Change Novel: A Faulty Simulator of Environmental Politics’, *Policy Innovations*, 7 November 2011, <http://www.policyinnovations.org/ideas/briefings/data/000230>

²¹ Ibid.

²² Cormac McCarthy, *The Road*, New York: Alfred A. Knopf, 2006.

²³ Oxtavia Butler, *The Parable of the Sower*, New York: Seven Sowers Press, 1993.

²⁴ Will Self, *The Book of Dave*, New York: Bloomsbury, 2006.

²⁵ Clive Cussler and Dirk Cussler, *Arctic Drift*, New York: Penguin Group, 2008.

²⁶ Paolo Bacigalupi, *The Windup Girl*, San Francisco: Night Shade Books, 2009.

²⁷ Matthew Glass, *Ultimatum*, New York: Atlantic Monthly Press, 2009.

²⁸ George Marshall, *The Earth Party: Love and Revolution at a Time of Climate Change*, Pen Press, 2010.

Trexler suggests that ‘Novels typically explore this very range, tracing the interactions between personal perspectives and the larger forces of society, politics, and environment.’³⁰ He comments that: ‘The majority of climate change novels are not explicitly political, though they do tend to engage with the fundamental argument over our need to act.’³¹ Reviewing this collection of work, Trexler suggests: ‘Unlike policy scenarios that are rooted in the hegemonic institutions of the day, the novel can begin to describe whole systems of interests, and simulate new forms of collective association between individuals, animals, corporations, regions, and countries’.³² He observed: ‘Yet after 30 years spent imagining our possible futures, the limits of the genre are starting to bump up against the limits of our political imaginations’.³³ He comments that ‘these recent novels about global warming suggest we need new ways of envisioning political alliances, blending technocratic and utopian aspects of policy.’³⁴

Australian writer Jane Rawson has posed the question of whether climate change fiction can succeed where scientific fact has failed.³⁵ She observed that ‘Fiction is great – it can help us really feel the horror of what we’re headed for, change our lives in a deeper way than

²⁹ T.C. Boyle, *A Friend of the Earth*, New York: Viking Books, 2000.

³⁰ Adam Trexler, ‘The Climate Change Novel: A Faulty Simulator of Environmental Politics’, *Policy Innovations*, 7 November 2011, <http://www.policyinnovations.org/ideas/briefings/data/000230>

³¹ Ibid.

³² Ibid.

³³ Ibid.

³⁴ Ibid.

³⁵ Jane Rawson, ‘Can Climate Change Fiction Succeed Where Scientific Fact Has Failed?’, *The Wheeler Centre*, 5 June 2014, <http://wheelercentre.com/dailies/post/e291b384291e/>

scientific projections alone could do, and give us ideas to help us adapt to the change – but it’s up against entrenched interests, big money and corrupt politicians who love convincing us to vote against our best interests.’³⁶ She quipped that ‘a Margaret Atwood trilogy may not be enough to stop [the fossil fuel lobby]’.³⁷

In a 2014 interview with David Holmes, Dan Bloom explores the genre of ‘Cli-Fi.’³⁸ He explained that cli-fi is a form of dystopian fiction:

First I need to explain the way I coined the term and have tried to popularise it in English-speaking countries. Cli-fi can take place in novels or movies either in the past, the present, or the future, and it does not have to be dystopian if the authors or screenwriters don’t want to go down the doom and gloom road. A cli-fi novel could also be utopian, and present an optimistic and hopeful future for the readers. I never started with a fixed agenda, and for me cli-fi is open to definition by writers and critics (and readers).

In general, I think cli-fi novels will take the position that climate change and global warming are real and are happening, but I am also open to the fact that some cli-fi novelists or screenwriters might take a skeptical view of global warming and climate change, as Michael Crichton did in his 1994 novel *State of Fear*.

But I myself am deep green and very worried about the future of humankind due to what I see as devastating climate impact events coming down the road in the next 500 years, if we as a world community do not stop CO₂ emissions soon. So for me, cli-fi is a fiction genre that might be helpful in waking people up and serving as an alarm bell.³⁹

³⁶ Ibid.

³⁷ Ibid.

³⁸ David Holmes, ‘‘Cli-Fi’’: Could a Literary Genre Help Save the Planet: An Interview with Dan Bloom’, *The Conversation*, 20 February 2014, <http://theconversation.com/cli-fi-could-a-literary-genre-help-save-the-planet-23478>

³⁹ Ibid.

Bloom maintains that ‘novelists, screenwriters, literary critics, and academics will determine what makes cli-fi in an organic way over the next 100 years.’⁴⁰ At this stage, he suggests: ‘This is just the beginning of a whole new world of literary and cinematic expression.’ He nominates for his canon of cli fi novels – George Turner’s *The Sea and The Summer*;⁴¹ Barbara Kingsolver’s *Flight Behaviour*;⁴² Nathaniel Rich’s *Odds Against Tomorrow*;⁴³ Tony White’s Shackleton’s *Man Goes South*;⁴⁴ and Jim Laughter’s *Polar City Red*.⁴⁵ Bloom quipped: ‘I believe if Isaac Asimov was to come back to life today, he would be writing cli-fi novels for sure.’⁴⁶

In 2011, Mark Martin edited a collection for Verso entitled, *I’m with the Bears: Short Stories from a Damaged Planet* to help raise money for 350.org.⁴⁷ Bill McKibben wrote the introduction. Ruefully, he acknowledged: ‘The problem with writing about global warming may be that the truth is larger than usually makes for good fiction.’⁴⁸ McKibben commented

⁴⁰ Ibid.

⁴¹ George Turner, *The Sea and the Summer*, London: Orion Publishing Group, 1987.

⁴² Barbara Kingsolver, *Flight Behaviour*, New York: Harper Perennial, 2012.

⁴³ Nathaniel Rich, *Odds Against Tomorrow*, New York: Farrar, Straus, and Giroux, 2013.

⁴⁴ Tony White, *Shackleton’s Man Goes South*, Science Museum, 2013.

⁴⁵ Jim Laughter, *Polar City Red*, Deadly Niche Print, 2012.

⁴⁶ David Holmes, ‘‘Cli-Fi’’: Could a Literary Genre Help Save the Planet: An Interview with Dan Bloom’, *The Conversation*, 20 February 2014, <http://theconversation.com/cli-fi-could-a-literary-genre-help-save-the-planet-23478>

⁴⁷ Mark Martin (ed.), *I’m with the Bears: Short Stories from a Damaged Planet*, London and New York: Verso, 2011.

⁴⁸ Bill McKibben, ‘Introduction’, in Mark Martin (ed.), *I’m with the Bears: Short Stories from a Damaged Planet*, London and New York: Verso, 2011, 1.

that the works could help highlight the relationship between people and nature. He noted of the stories in the collection: ‘Instead of being consumed with the relationships between people, they increasingly take on the relationship between people and everything else’.⁴⁹ Instead of being merely a background for human drama, nature itself is the subject of foreground conflict. McKibben emphasized that literature could also be a source of hope. He suggested that ‘one task, perhaps, of our letters in this emergency is to help provide that sense of what life might be like in the world past fossil fuel.’⁵⁰ In the end, McKibben commented that the job of writers is to illuminate and to bear witness. He worried: ‘With climate change we face the biggest single thing human beings have ever done, so big as to be almost invisible.’⁵¹

A. Margaret Atwood’s Maddaddam Trilogy

The Canadian novelist and poet, Margaret Atwood, has long been interested in the relationship between art and science, culture and nature, law and crime. Her Maddaddam Trilogy was particularly interested in such themes.⁵² In a 2013 essay entitled ‘We Must Tackle Climate Change Together’, Margaret Atwood wrote an article, praising the development of the genre of ‘cli-fi’.⁵³ She commented that ‘Conditions around the world are

⁴⁹ Ibid., 3-4.

⁵⁰ Ibid., 4.

⁵¹ Ibid., 4.

⁵² Margaret Atwood, *Oryx and Crake*, London: Bloomsbury, 2003; Margaret Atwood, *The Year of the Flood*, London: Bloomsbury, 2009; and Margaret Atwood, *MadAddam*, London: Bloomsbury, 2013.

⁵³ Margaret Atwood, ‘We Must Tackle Climate Change Together’, *The Huffington Post*, 11 December 2013, http://www.huffingtonpost.ca/margaret-atwood/atwood-climate-change_b_4256145.html

being altered much faster than was formerly predicted'.⁵⁴ In her view, 'The cost of the resulting destructions to homeowners, taxpayers and governments is slated to go through the roof, not to mention the lives that will be lost.'⁵⁵ Atwood considers the creative responses to such climate chaos:

Novelists, filmmakers and other creators have been registering these changes for some time. There's a new term, cli-fi (for climate fiction, a play on sci-fi), that's being used to describe books in which an altered climate is part of the plot. Dystopic novels used to concentrate only on hideous political regimes, as in George Orwell's *Nineteen Eighty-Four*. Now, however, they're more likely to take place in a challenging landscape that no longer resembles the hospitable planet we've taken for granted. Whether fictional or factual, the coming decades don't sound like a picnic. It's a scary scenario, and we're largely unprepared. It's not that we weren't warned, but it was easier to think of such things as happening elsewhere: As long as we're not affected personally, we don't like to dwell on bad news. That's simply human nature. Even recently, people have said they "don't believe" in climate change, as if it is akin to Santa Claus or the tooth fairy. But chemistry and physics are not beliefs; they are ways of measuring the physical world. They don't negotiate, and they don't hand out second chances.⁵⁶

The novelist has been further exploring such ideas in 2014, giving talks and presentations on 'exploring climate fiction.'⁵⁷ Atwood has been interested in the question, 'How can imagination and the creative arts combine with science to assist in developing solutions to

⁵⁴ Ibid.

⁵⁵ Ibid.

⁵⁶ Ibid.

⁵⁷ Margaret Atwood, 'Exploring Climate Fiction', Arizona State University, 5 November 2014, <https://asuevents.asu.edu/margaret-atwood-exploring-climate-fiction>

today's climate challenges?'⁵⁸ She has been discussing the emergence of the new genre of climate fiction – Cli-fi, and how creative writing can reflect upon environmental issues such as sustainability and climate change. In an interview about hope, science, and the future, Atwood has wondered about the suitability of the term, 'Cli-Fi':

I think calling it climate change is rather limiting. I would rather call it the everything change because when people think climate change, they think maybe it's going to rain more or something like that. It's much more extensive a change than that because when you change patterns of where it rains and how much and where it doesn't rain, you're also affecting just about everything. You're affecting what you can grow in those places. You're affecting whether you can live there. You're affecting all of the species that are currently there because we are very water dependent. We're water dependent and oxygen dependent. The other thing that we really have to be worried about is killing the oceans, because should we do that there goes our major oxygen supply, and we will wheeze to death. I think calling it climate change is rather limiting. I would rather call it the everything change.⁵⁹

Atwood suggests: 'It's rather useless to write a gripping narrative with nothing in it but climate change because novels are always about people even if they purport to be about rabbits or robots.'⁶⁰ She emphasizes the need for human drama: 'They're still really about people because that's who we are and that's what we write stories about.'⁶¹ Atwood has

⁵⁸ Ibid.

⁵⁹ Ed Finn, 'Margaret Atwood Interview: It's Not Climate Change. It's Everything Change', *Future Tense*, Slate, 6 February 2015, http://www.slate.com/articles/technology/future_tense/2015/02/margaret_atwood_interview_the_author_speaks_on_hope_science_and_the_future.html

⁶⁰ Ibid.

⁶¹ Ibid.

played a role in the developing of the Imagination and Climate Futures Initiative at Arizona State University.⁶²

B. Ian McEwan's *Solar*

One of the canonical works of climate fiction is Ian McEwan's *Solar*.⁶³ In 2005, the novelist Ian McEwan engaged with the topic of climate change. He went on a trip to Spitsbergen in February 2005 with Cape Farewell.⁶⁴ In an essay, he maintained that there was a need to engage with science and art to understand the global dimensions of climate change:

The climate change debate is hedged by uncertainties. Can we avoid what is coming at us, or is there nothing much coming at all? Are we at the beginning of an unprecedented era of international cooperation, or are we living in an Edwardian summer of reckless denial? Is this the beginning, or the end? We need to talk.⁶⁵

The novelist suggested that 'whatever our environmental problems are, they will have to be dealt with by [international laws](#).'⁶⁶ He observed that 'No single nation is going to restrain its industries while its neighbours' are unfettered.'⁶⁷ McEwan called for enlightened globalisation: 'Good international law might need to use not our virtues, but our weaknesses

⁶² Arizona State University, *Imagination and Climate Futures Initiative*, <https://climateimagination.asu.edu/>

⁶³ Ian McEwan, *Solar*, London: Jonathan Cape, 2010.

⁶⁴ Cape Farewell, 'The Cultural Response to Climate Change', <http://www.capefarewell.com/>

⁶⁵ Ian McEwan, 'Let's Talk About Climate Change', Open Democracy, 20 April 2005, https://www.opendemocracy.net/globalization-climate_change_debate/article_2439.jsp

⁶⁶ Ibid.

⁶⁷ Ibid.

(greed, self-interest) to lever a cleaner environment; in this respect, the newly devised market in carbon trading was a crafty first move.’⁶⁸

In 2010, Ian McEwan published a work of fiction, *Solar*, a dark, black comedy about climate science and humankind.⁶⁹ The protagonist of the book is Professor Michael Beard - a physicist; a man on the make; desperate for fame and fortune. The character hopes to profit from the commercialisation of intellectual property associated with clean technologies:

The revolution has begun. The market will be even more lucrative than coal or oil because the world economy is many times bigger and the rate of change is faster. Colossal fortunes will be made. The sector is seething with vitality, invention – and, above all, growth. It has thousands of unquoted companies positioning themselves with new techniques. Scientists, engineers, designers are pouring into the sector. There are log jams in the patent offices and supply chains. This is an ocean of dreams, of realistic dreams of making hydrogen from algae, aviation fuel from genetically modified microbes, of electricity out of sunlight, wind, tides, waves, cellulose, household waste, of scrubbing carbon dioxide from the air and turning it into a fuel, of imitating the secrets of plant life. An alien landing on our planet and noticing how it was bathed in radiant energy would be amazed to learn that we believe ourselves to have an energy problem, that we ever should have thought of poisoning ourselves by burning fossil fuels or creating plutonium.⁷⁰

Beard is industrious: ‘He was securing the patents, assembling a consortium, he had progressed the lab work, involved some venture capital, and when it all came together, the world would be a better place.’⁷¹ His greed, though, leads him astray. The book turns into a

⁶⁸ Ibid.

⁶⁹ Ian McEwan, *Solar*, London: Jonathan Cape, 2010.

⁷⁰ Ibid., 153.

⁷¹ Ibid., 186.

murder mystery – with Beard murdering his collaborator in order to claim credit for his inventions.

In an interview, Ian McEwan wondered whether he would disappoint his readers' expectations, with the work:

I know I'm going to get it with this one. People are going to say this is a novel against climate change, or a climate change sceptic's novel – because people are so passionately committed to the idea that we're facing a calamity and have to do something very quickly, and any novel that doesn't say that will be very irritating for them. But it is not the job of novelists to save the world. No. But I am as keen that it should be saved as anybody.⁷²

The work is an unsettling one – it is a curious combination of styles and genres. *Solar* has not received the acclaim of some of Ian McEwan's other books – like *The Comfort of Strangers*,⁷³ *Enduring Love*,⁷⁴ *Atonement*,⁷⁵ and *Saturday*.⁷⁶

The Australian novelist, James Bradley, was underwhelmed by Ian McEwan's effort in *Solar*.⁷⁷ While recognising the author's success in *Atonement* and *Enduring Love*, he is

⁷² Mick Brown, 'Ian McEwan: Warming to the Topic of Climate Change', *The Telegraph*, 11 March 2010, <http://www.telegraph.co.uk/culture/books/7412584/Ian-McEwan-interview-warming-to-the-topic-of-climate-change.html>

⁷³ Ian McEwan, *The Comfort of Strangers*, New York: Simon & Schuster, 1981.

⁷⁴ Ian McEwan, *Enduring Love*, New York: Nan A. Talese/ Doubleday 1997.

⁷⁵ Ian McEwan, *Atonement*, New York: Nan A. Talese/ Doubleday, 2001.

⁷⁶ Ian McEwan, *Saturday*, New York: Nan. A. Talese/ Doubleday, 2005.

⁷⁷ James Bradley, 'Is It Possible to Write Good Fiction About Climate Change?', *Meanjin*, 25 March 2015, <http://meanjin.com.au/blog/post/is-it-possible-to-write-good-fiction-about-climate-change/>

puzzled by *Solar*: ‘It’s not so much that it’s didactic, or even that it feels like the work of a writer who feels so passionate about a subject that they have to do something (though it does), it’s that it’s so under-imagined and structurally uncertain, so embarrassingly unfunny, and – perhaps most damningly – that McEwan himself doesn’t feel convinced by what he’s doing.’⁷⁸ Bradley suggested that ‘*Solar*’s failure is also reflective of some of the conventional realist novel’s more general limitations, especially when confronted by an issue as large, and as systemic as climate change.’⁷⁹ Bradley noted the concerns of Stephen Wright about the conservatism and timidity of writers and publishers in addressing climate change. Noting that the ‘climate catastrophe shadows the whole of the twentieth and twenty-first centuries’, Wright asks: ‘If we can’t write with the full consciousness of that shadow over us, what the hell are we writing?’⁸⁰

Bradley wonders whether science fiction is better suited to tackling climate change: ‘While the capacity of Science Fiction to step outside the strictures of reality makes it better at dealing with these sorts of big ideas than conventional literary fiction, it’s hobbled by many of the same problems when it comes to climate change.’⁸¹

In his own fiction, Bradley considers the future of runaway climate change in his book, *Clade*.⁸² His work is a cloud atlas of climate change. Bradley weaves together a multi-

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Stephen Wright, ‘The Elephant in the Room’, *Overland*, 15 March 2010, <https://overland.org.au/2010/03/the-elephant-in-the-room/>

⁸¹ James Bradley, ‘Is It Possible to Write Good Fiction About Climate Change?’, *Meanjin*, 25 March 2015, <http://meanjin.com.au/blog/post/is-it-possible-to-write-good-fiction-about-climate-change/>

⁸² James Bradley, *Clade*, Sydney: Penguin Books, 2015.

generational series of family stories, considering the impact of climate change upon the weather, animal life, human migration and security. He has called the novel 'geological fiction.'⁸³ He has explained his approach to science fiction in these terms:

To write about the world ending is easy - it leaves the writer with nothing to imagine," he says. "What is much harder is to conceive of the world in 100 or 100,000 years. Let's face it, our lives today are already sci-fi thanks to technology, though I didn't want *Clade* to be about gadgets and gizmos. The reality we live in is already enhanced. But I wanted the technological stuff to be in the background so as not to frighten mainstream readers who don't like the futuristic genre.⁸⁴

The Science Fiction critic, Colin Steele, reflects: 'Bradley's story of the Leith family's fortunes over three generations in the 21st century serves as a microcosm for traumatic global change reflected in apocalyptic weather, a global pandemic and economic collapse.'⁸⁵

James Bradley contends that climate change has entered people's imaginations: 'If you give people something tangible – something they can engage with imaginatively – perhaps you can get them to shift their thinking a bit.'⁸⁶

⁸³ Caroline Baum, 'James Bradley's *Clade* Finds Glimmer of Hope in Extreme Future', *The Sydney Morning Herald*, 31 January 2015, <http://www.smh.com.au/entertainment/books/james-bradleys-clade-finds-glimmer-of-hope-in-extreme-future-20150122-12ti6g.html>

⁸⁴ Ibid.

⁸⁵ Colin Steele, 'Speculative Fiction: Wave of Books Raise Profile of Genre', *The Sydney Morning Herald*, 20 February 2015, <http://www.smh.com.au/entertainment/books/speculative-fiction-wave-of-books-raise-profile-of-genre-20150218-12i3ye.html>

⁸⁶ Sarah Price, 'James Bradley's Climate of Fear', *The Saturday Paper*, 30 May 2015, <https://www.thesaturdaypaper.com.au/2015/05/30/james-bradleys-climate-fear/14329080001923#.VWvWgc-qpBe>

C. A View from the Future

The historians of science, Erik Conway and Naomi Oreskes, documented industry denial in their book *Merchants of Doubt* – looking at the tobacco industry’s attacks on public health, and the climate denial of the fossil fuel industry.⁸⁷

The pair have collaborated together on a work of fiction, called *The Collapse of Western Civilization: A View From the Future*.⁸⁸ The work is written from the point of view of a historian in 2393 explaining how ‘the Great Collapse of 2093’ occurred. In the introduction, Oreskes and Conway explain that ‘science fiction writers construct an imaginary future; historians attempt to reconstruct the past.’⁸⁹ The pair observe that ‘Ultimately, both are seeking to understand the present.’⁹⁰ The work is an apocalyptic one. Oreskes and Conway imagine: ‘As the devastating effects of the Great Collapse began to appear, the nation-states with democratic governments – both parliamentary and republican – were at first unwilling and then unable to deal with the unfolding crisis.’⁹¹ The writers conclude: ‘As food shortages and diseases outbreaks spread and sea level rose, these governments found themselves without the infrastructure and organizational ability to quarantine and relocate people.’⁹² The future history envisages China responding to the climate crisis, most effectively.

⁸⁷ Naomi Oreskes and Erik Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from tobacco Smoke to Global Warming*, New York: Bloomsbury Press, 2010.

⁸⁸ Naomi Oreskes and Erik Conway, *The Collapse of Western Civilization: A View from the Future*, New York: Columbia University Press, 2014.

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ Ibid., 63.

⁹² Ibid., 63-64.

In an interview with *The New York Times*, Naomi Oreskes explained the choice of genre in the book:

Erik is a big science fiction fan. As historians, both of us have spent a lot of time looking back. That made us wonder how a historian of the future might view the decisions being made today. Writing in this genre gave us the freedom to extrapolate and show what's at stake. Our narrator concludes that in the 21st century, the forces of climate denial prevailed.⁹³

In another discussion, Naomi Oreskes explained that 'our story is a call to protect the American way of life before it's too late.'⁹⁴ Although the story is a work of speculative fiction, she observed that the 'book is extremely fact-based' with 'all the technical projections are based on current science.'⁹⁵

Erik Conway adds that 'science fiction has explored issues of climate change and disruption for decades.'⁹⁶ He comments that there are numerous advantages in a working in a fictional mode:

One is that you can address themes in ways that are very difficult for historians, because you are not so strictly limited by sources... History tends to be skewed toward topics and people who have left

⁹³ Claudia Dreifus, 'A Chronicler of Warnings Denied: Naomi Oreskes Imagines the Future History of Climate Change', *The New York Times*, 27 October 2014, http://www.nytimes.com/2014/10/28/science/naomi-oreskes-imagines-the-future-history-of-climate-change.html?_r=0

⁹⁴ Naomi Oreskes and Erik Conway, *The Collapse of Western Civilization: A View from the Future*, New York: Columbia University Press, 2014, 91.

⁹⁵ Ibid., 91.

⁹⁶ Ibid., 76.

extensive, and open, records. Historians also have to stay close to their source material, which sometimes gets in the way of telling a good story. Fiction gives you more latitude, and here we try to use that latitude in interesting and thought-provoking ways, but always with the goal of being true to the facts: true to what science tells us could really happen if we continue with business as usual, and true to what history suggests is plausible. Nothing is invented out of whole cloth.⁹⁷

Naomi Oreskes observed that they had in part been inspired by the work of Margaret Atwood, particularly *Alias Grace*.⁹⁸ The work was inspired by ‘honoring the factual constraints of nature – as illuminated by science – with the creative opportunities offered by fiction that helped inspire the piece.’⁹⁹

The collection *Hieroglyph* edited by Ed Finn and Kathryn Cramer considers a range of optimistic visions of the future by creative writers and storytellers.¹⁰⁰ The editors observed that:

Science fiction has always been an idea-driven literature that inspires people to become scientists and engineers. And a major part of the job of being a science fiction writer is coming up with ideas good enough, or entertaining enough, to allow for the willing suspension of disbelief, inviting a group of readers in to share the dream. Our key task as editors has been to cultivate stories that would take this further, shepherding ecosystems of interest and innovation around radical ideas. We hope that framing these challenges in an exciting, accessible way will spark some real solutions.¹⁰¹

⁹⁷ Ibid., 76-77.

⁹⁸ Margaret Atwood, *Alias Grace*, Anchor, 1996.

⁹⁹ Naomi Oreskes and Erik Conway, *The Collapse of Western Civilization: A View from the Future*, New York: Columbia University Press, 2014.

¹⁰⁰ Ed Finn and Kathryn Cramer (ed.), *Hieroglyph: Stories and Visions for a Better Future*, New York: William Morrow, 2014.

¹⁰¹ Ibid., 5.

One striking story by Cory Doctorow – ‘The Man Who Sold the Moon’ - considers the combination of 3D printing, renewable energy, and space technology.¹⁰² The collection is designed to be an antidote to dystopian visions of the future.

In addition to fictional literature, there has been a growth in non-fictional works of autobiography in respect of climate change.

In *Walden Warming: Climate Change Comes to Thoreau's Woods*, Richard Primack uses a classic work of American literature to consider the impact of climate change, using natural history and citizen science.¹⁰³ He commented: ‘When a historical perspective is combined with modern observations, one thing becomes clear: climate change has come to Walden Pond.’¹⁰⁴

In the 2012 *Madlands*, Anna Rose tells of her efforts to convince climate sceptic and Australian politician, Nick Minchin, of the need for climate action.¹⁰⁵ In the 2012 *Hockey Stick and the Climate Wars*, Michael Mann writes about his personal experience of climate

¹⁰² Cory Doctorow, ‘The Man Who Sold the Moon’ in Ed Finn and Kathryn Cramer (ed.), *Hieroglyph: Stories and Visions for a Better Future*, New York: William Morrow, 2014.

¹⁰³ Richard Primack, *Walden Warming: Climate Change Comes to Thoreau's Woods*, Chicago and London: The University of Chicago Press, 2014.

¹⁰⁴ Ibid., ix.

¹⁰⁵ Anna Rose, *Madlands: A Journey to Change the Mind of a Climate Sceptic*, Melbourne: Melbourne University Press, 2012.

scientists being assailed by the fossil fuel lobby.¹⁰⁶ In his 2013 book, *Oil and Honey: The Education of an Unlikely Activist*, the environmentalist Bill McKibben tells two stories: ‘Here’s a story of two lives lived in response to a crazy time – a time when the planet began to come apart, a time when bee populations suddenly dropped in half.’¹⁰⁷ One story is a personal memoir, a Henry David Thoreau-style work of philosophy, poetry, naturalism, and reverie. It focuses upon Vermont, agriculture, farming, and bee-keeping. The other is a political story, a *cri de Coeur*, a call-to-arms for climate activists against the fossil fuel industry. It is a war story of fossil fuel divestment, civil disobedience, and political protests. In the 2014 *This Changes Everything: Capitalism vs The Climate*, Naomi Klein provides a personal account of her engagement with climate politics and climate activism.¹⁰⁸

2. Artistic Works

Professor Ann McCulloch has wondered whether art has a powerful role to play in respect of communication about climate change:

How can art communicate to a sceptical public the current state of climate? Scientists agree human influence is paramount in explaining climate change, but the public at large is not drawn naturally to

¹⁰⁶ Michael Mann, *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines*, New York: Columbia University Press, 2012.

¹⁰⁷ Bill McKibben, *Oil and Honey: The Education of an Unlikely Activist*, Melbourne: Black Inc. Books, 2013.

¹⁰⁸ Naomi Klein, *This Changes Everything: Capitalism vs The Climate*, New York: Simon & Schuster, 2014.

science education. With this in mind, art's power to target the emotions of an audience could be particularly effective.¹⁰⁹

It is worth considering the range of artistic responses to climate change – particularly highlighting the photographic work of James Balog.

James Balog is a famous nature photographer. In 2005, he undertook a photography project for *The New Yorker*, looking at the glaciers of Iceland. He then engaged in an assignment for *National Geographic* in 2006 – ‘The Big Thaw’.¹¹⁰ In 2007, Balog founded the Extreme Ice Survey.¹¹¹ The mission of the project is explained in these terms:

Seeing is believing. Real-world visual evidence has a unique ability to convey the reality and immediacy of global warming to a worldwide audience. The Extreme Ice Survey provides scientists with basic and vitally important information on the mechanics of glacial melting and educates the public with firsthand evidence of how rapidly the Earth's climate is changing. Extreme Ice Survey is a voice for landscapes that would have no voice unless we humans give them one.¹¹²

This organisation is intended to be ‘an innovative, long-term photography project that merges art and science to give a “visual voice” to the planet's changing ecosystems’.¹¹³ The ‘imagery preserves a visual legacy, providing a unique baseline—useful in years, decades and even

¹⁰⁹ Ann McCulloch, ‘Can Art Change Minds Where Science Can't?’, *The Conversation*, 11 February 2012, <http://theconversation.com/can-art-change-minds-where-science-cant-5320>

¹¹⁰ Tim Appenzeller (writer) and James Balog (Photography) ‘The Big Thaw’, *National Geographic*, 2007, <http://ngm.nationalgeographic.com/2007/06/big-thaw/big-thaw-text>

¹¹¹ Extreme Ice Survey, <http://extremeicesurvey.org/>

¹¹² Ibid.

¹¹³ Ibid.

centuries to come—for revealing how climate change and other human activity impacts the planet.’¹¹⁴ The Extreme Ice Survey engages in time-lapse photography of glaciers across the world – including at sites in Greenland, Iceland, Nepal, Alaska, and the Rocky Mountains. The Extreme Ice Survey also provides single-frame photography of ice. The Extreme Ice Survey also makes videos about its work.

In his book *Ice: Portraits of Vanishing Glaciers*, James Balog highlights a selection of the work of the Extreme Ice Survey.¹¹⁵ He explains his fascination with ice as a subject for photography:

In Ice is the memory of the world. Of sunlight and darkness, of air and water, of molecules hot and cold, of our spinning planet plunging through galactic space. On secret diamond faces, ice has written runic codes of time past foretelling a world that is still to come.

As Homo sapiens motors forward through the waves of time, our culture and civilization are forgetting what makes nature natural before we even notice what it is we’re supposed to remember. Earth’s primal reality vanishes without a trace. Baselines shift. Natural amnesia and nature deficit disorder breed in the vacuum where memory once thrived.¹¹⁶

Balog contends that the Extreme Ice Survey is intended to be an antidote to such ecological amnesia: ‘We do our best to speak for the glistening landscapes of white and sapphire and emerald that would otherwise have neither voice nor witness.’¹¹⁷ In his view, ‘ice matters.’¹¹⁸ Balog observes that ‘it’s the place where we can see and hear and feel climate change in

¹¹⁴ Ibid.

¹¹⁵ James Balog, *Ice: Portraits of Vanishing Glaciers*, New York: Rizzoli international Publications, 2012.

¹¹⁶ Ibid., 10.

¹¹⁷ Ibid., 10.

¹¹⁸ Ibid., 13.

action.’¹¹⁹ He believes: ‘When ice melts, everyone – regardless of age or ideological persuasion – can understand what it means.’¹²⁰

James Balog explores the respective roles of science and art in respect of climate policy

Science and art seek clarity and vision. Lobbyists and pundits seek confusion and controversy, for it is within a noise cloud of false information that ignorance hides. As long as the general public thinks climate change isn’t real or that science is still debating it, fossil fuel industries protect their profits. Without social clarity, political leaders – who are often financially beholden to fossil fuel industries – have no motivation to act. Finally, when the military, health, and environmental costs of fossil fuels are spread far and wide in the economic system and don’t show up in gasoline prices and electricity bills, market signals don’t help us to make correct decisions either.¹²¹

In this context, Balog contends that ‘clear perception is thus the key for at least beginning to change the impact we’re having on the planet.’¹²² He hopes: ‘With clarity, the technological, economic and policy solutions to energy use and climate change – a zillion of them that have already been mapped out – can be widely implemented.’¹²³ Balog frames the issue as one of human rights: ‘Every human being has an inalienable right to a stable climate.’¹²⁴

¹¹⁹ Ibid., 13.

¹²⁰ Ibid., 13.

¹²¹ Ibid., 13.

¹²² Ibid., 13.

¹²³ Ibid., 13.

¹²⁴ Ibid., 13.

The work of the Extreme Ice Survey was the subject of a documentary, *Chasing Ice*.¹²⁵ The film is a spectacular piece of work – particularly its dramatic footage of calving ice. James Balog hoped that the work would change perceptions of climate change.

This is about rational observation of rational evidence reasonably observed by reasonable people. I have found repeatedly that no matter what somebody's preconception was about climate change, if I could get them in the room and show them in a gentle and impartial way what our team has observed in the world, they realize through their intellect and their hearts that this is real. And I've had many audiences with climate skeptics or climate deniers in the room – in many cases the majority – and I still have wound up with standing ovations from those crowds. The witnessing that we've done is powerful and it seems to inspire people to know that there are others who risk their lives and their careers for this cause. People recognize that we're not making this stuff up for political gain or financial gain. People look at this film and they go, "these guys are practically killing themselves to get these pictures — this must mean something." And it does.¹²⁶

Balog hoped to expand upon the work of the Extreme Ice Survey: 'I intend to continue to look at human-caused change in the natural world – it's really what I've been photographing already for the past 30 years'.¹²⁷ He was keen to continue his work on culture and climate change: 'And going forward I've got a couple big ideas that are in gestation right now for

¹²⁵ Jeff Orlowski (director), and Mark Monroe (writer), *Chasing Ice*, 2012, http://www.imdb.com/title/tt1579361/?ref=fn_al_tt_1

¹²⁶ Stephen Lacey, 'Interview: "Chasing Ice" Star James Balog Talks Art, Science, Rationality, and Climate Denial', *Think Progress*, 11 December 2012, <http://thinkprogress.org/climate/2012/12/11/1312111/interview-chasing-ice-star-james-balog-talks-art-science-rationality-and-climate-denial/>

¹²⁷ Ibid.

continuing to try to make innovative, artistic, compelling interpretations of the world as it's changing around us.'¹²⁸

Reviewing the documentary, Nina Burleigh reflected upon the work:

Chasing Ice humanizes an enormous and incomprehensible geological phenomenon with time-lapse images, putting unusually rapid geological change on breathtaking display. It also personalizes the story by focusing on one man, the photographer whose commitment to the project involved repeated knee surgery so he could keep scrabbling up icy inclines to check his cameras, and the technological difficulties of building and maintaining photo gear in the harshest conditions on the planet.¹²⁹

Professor Anne McCulloch commented that 'Science seems to be failing to change the minds of those who are sceptical about the reality of anthropogenic climate change'.¹³⁰ Although she was of the view that '*Chasing Ice* is a significant film' and 'exciting to the mind and visual imagination of anyone who accepts climate change as a reality', she wondered whether its narrative would be 'persuasive to most climate change sceptics.'¹³¹ However, the powerful visual images of the documentary certainly left their mark on viewers.¹³²

¹²⁸ Ibid.

¹²⁹ Nina Burleigh, "'Ice' Storm: New Doc Shows How Swelling Oceans Threaten to Swallow Manhattan Altogether", *New York Observer*, 30 October 2012, <http://observer.com/2012/10/ice-storm-new-doc-shows-how-swelling-oceans-threaten-to-swallow-manhattan-altogether/>

¹³⁰ Anne McCulloch, 'Chasing Ice Bewitches Eyes But Won't Change Minds', *The Conversation*, 12 April 2013, <https://theconversation.com/chasing-ice-bewitches-eyes-but-wont-change-minds-13326>

¹³¹ Ibid.

¹³² Tara Loha, 'Bill O'Reilly-Loving Climate Denier Breaks Down After Watching Documentary "Chasing Ice," Vows to Stop Climate Change', *Alternet*, 27 November 2012,

In China, the United States, the United Kingdom, Australia, and a range of other countries around the world, Cape Farewell has hosted an exhibition called *Unfold* in order to prompt a cultural response to climate change.¹³³ The exhibition featured the work of score of artists, from around the world, who had travelled on expeditions to the Arctic and the Andes. Cape Farewell's founder and director, David Buckland, explains that the work involves the collaboration between artists and scientists: 'What we do is we embed them [the artists] with a scientist, that's a very important part of it. The scientist informs the artists and then the artist is being inspired to try and create something.'¹³⁴ He comments:

The scientists are the messengers but it is really important that all of us take on board that climate change is a very serious event. I think the artworks themselves contain stories, narratives and that is a lovely way to talk to the wider public. At the same time it would be good to educate but it is more important for people to be excited about what we are doing and to re-frame the climate debate.¹³⁵

Buckland observed: 'It's an incredibly big ask to try to re-frame our complex societies and I think that is very difficult for anyone to find a way through this'.¹³⁶ He said: 'Can we be inspired to think differently and hopefully find solutions to what is a global problem but working locally?'¹³⁷

<http://www.alternet.org/environment/watch-bill-oreilly-loving-climate-denier-breaks-down-after-watching-documentary-chasing>

¹³³ Jennifer Duggan, 'Climate Change Exhibition Opens in China', *The Guardian*, 25 May 2013, <http://www.theguardian.com/environment/chinas-choice/2013/may/25/climate-change-art-exhibition-beijing>

¹³⁴ Ibid.

¹³⁵ Ibid.

¹³⁶ Ibid.

¹³⁷ Ibid.

Australian art is increasingly responsive to the impact of climate change upon nature and landscape. In a survey of recent Australian work addressing environmental themes, Andrew Frost suggested: 'We are living through a slow motion apocalypse'.¹³⁸ He observed: 'The tumultuous destruction of biblical prophecy and Hollywood disaster movies has given way to the slow boil of global warming where every moment of every day may be a prelude to disaster.'¹³⁹ Frost maintained that 'this pervasive sense of doom has in part prompted a revival in contemporary art of the core themes of western art: the landscape, nature and human survival.'¹⁴⁰ He suggested: 'Yet with the slow disasters of our time, this surge of work reminds us that contemporary art has a role to play in making sense of the world, and to do it by reviving the core belief of western art: we must be humble in the face of nature and recognise its importance to our survival.'¹⁴¹

There has been also been experimentation with using other art forms to represent battles over climate science. In *Climate Changed*, Philippe Squarzoni uses the format of a graphic novel to explore his personal journey through climate science.¹⁴² The Canadian writer Franke James has explored Canadian government censorship of climate art in *Banned on the Hill*.¹⁴³ Isaac

¹³⁸ Andrew Frost, 'Concerns around climate change are shaping new Australian art', *The Guardian*, 7 November 2013, <http://www.theguardian.com/culture/2013/nov/07/shoufay-derz-artereal-review>

¹³⁹ Ibid.

¹⁴⁰ Ibid.

¹⁴¹ Ibid.

¹⁴² Philippe Squarzoni, *Climate Changed: A Personal Journey Through the Science*, New York: Abrams Comic Arts, 2012.

¹⁴³ Franke James, *Banned on the Hill: A True Story about Dirty Oil and Government Censorship*, The James Gang, 2013.

Cordal's sculpture 'Politicians discussing Global Warming' as part of his 'Follow the Leaders' work has been a powerful artistic response to political procrastination in respect of climate change.¹⁴⁴

The climate movement 350.org has sought to use art to highlight the impact of climate change.¹⁴⁵ In 2010, in the lead up to the UN Climate Meetings in Cancun, Mexico, 350.Org co-ordinated a dozen major public art pieces, which were visible from space. 350.org founder and environmental author Bill McKibben observed of the work:

Art can convey in a different way than science the threat that climate change poses to our planet. The world's best scientists have tried to wake-up politicians to the climate crisis, now we're counting on artists to help. The first pictures of Earth from space helped launch the modern environmental movement. We hope these art pieces can help spark a new movement to solve the climate crisis. Art is not a substitute for political action, but it can help build a public movement that can begin to apply real pressure.¹⁴⁶

The project includes land art; aerial art; concerts; murals; flash mobs; and street art. The group 350.org has integrated the arts, creative expression, and culture-jamming into its repertoire of social campaigns.

¹⁴⁴ Isaac Cordal, 'Follow the Leaders', <http://cementeclipses.com/> and <http://cementeclipses.com/Works/follow-the-leaders/>

¹⁴⁵ 350.org Art, <http://art.350.org/press-room/>

¹⁴⁶ 350.Org, 'Putting the "Art" Back in Earth: Climate Campaign 350.org Works to Combine Arts and Activism Around the World', February 2011, <http://art.350.org/press-room/>

In the same spirit, in 2014, the People’s Climate March extensively used art and creative expression to promote the event.¹⁴⁷ The People’s Climate March asked: ‘We invite you to join us in building bold, innovative and vibrant artists wing of the People’s Climate March and surrounding actions so that we may help uplift the stories of our many communities and clearly communicate the historic urgency of this moment.’¹⁴⁸ The People’s Climate March emphasized: ‘Social Movements do not succeed without arts & culture that spark the public imagination and help give rise to a popular movement.’¹⁴⁹ The organisers asked: ‘Join us in linking together with other creators as we scheme, dream, sing, draw, paint, build, write, and perform creative resistance to the exploitative injustices of Climate Change and challenge those who profit from it.’¹⁵⁰ The event featured an extraordinary range and diversity of public art.¹⁵¹ Shepard Fairey contributed a distinctive poster for the event – ‘It’s both an honor and a calling of my conscience for me to contribute a poster to the People’s Climate March effort and get something urgent across about one of the biggest threats facing present and future generations. Lady Liberty and all of us are in trouble if we don’t push our leaders to take bold action.’¹⁵²

There has also been an influential fossil fuel divestment movement, sweeping the world, encouraging schools, universities, religious institutions, superannuation funds, and sovereign

¹⁴⁷ People’s Climate Art, <http://peoplesclimate.org/arts/>

¹⁴⁸ Ibid.

¹⁴⁹ Ibid.

¹⁵⁰ Ibid.

¹⁵¹ Zach Roberts, ‘The Artists Behind the People’s Climate March’, *DeSmogBlog.Com*, 22 September 2014, <http://www.desmogblog.com/2014/09/22/artists-behind-people-s-climate-march>

¹⁵² Shepard Fairey, ‘People’s Climate March – To Change Everything We Need Everyone’, September 2014 <http://www.obeygiant.com/prints/peoples-climate-march-to-change-everything-we-need-everyone>

wealth funds to divest themselves of fossil fuel stocks. In this context, there has been much controversy over the sponsorship of galleries and art shows by oil, coal, and gas companies. Professor Toby Miller provides a useful overview:

Corporate polluters engage in art sponsorship as part of their quest for what they call a “**social license**” to operate. That means winning local, national, and international communities support. For instance, global oil and gas company BP has powerful, enduring relationships with **Britain’s principal cultural institutions** as measured by size, visits, and media coverage, including the National Gallery, the National Maritime Museum, Tate Britain, the Natural History Museum, the Science Museum, and the National Gallery.¹⁵³

There has been particular controversy over BP’s sponsorship of the Tate.¹⁵⁴ John Jordan warned: ‘If our present culture collaborates in celebrating the burning of fossil fuels, it may lead us to a place with very similar temperatures.’¹⁵⁵ There has been a number of protests against cultural sponsorship of the arts. Miller observes: ‘From Shakespearean flash mobs in London, to zombies and a “dying” koala at one of Australia’s most popular art galleries in Brisbane, there are growing protests over big oil and gas companies’ sponsorship of the arts.’¹⁵⁶ He notes that culture-jamming tactics have been popular: ‘The right blend of irony, sarcasm, and showmanship is a good way to mock high art’s dalliance with high polluters.’¹⁵⁷

¹⁵³ Toby Miller, ‘Global Arts Scene Awash with Big Oil and Gas Sponsorship’, *The Conversation*, 11 April 2014, <http://theconversation.com/global-arts-scene-awash-with-big-oil-and-gas-sponsorship-25221>

¹⁵⁴ John Jordan. ‘Will BP lead Tate into Artistic Hell’, *the Guardian*, 1 July 2010, <http://www.theguardian.com/culture/2010/jul/01/tate-bp-corporate-sponsorship>

¹⁵⁵ Ibid.

¹⁵⁶ Toby Miller, ‘Global Arts Scene Awash with Big Oil and Gas Sponsorship’, *The Conversation*, 11 April 2014, <http://theconversation.com/global-arts-scene-awash-with-big-oil-and-gas-sponsorship-25221>

¹⁵⁷ Ibid.

The fossil fuel divestment movement will increasingly encourage cultural institutions to divest themselves of sponsorship from fossil fuel companies.

3. Musical Works

There is a long tradition of music and performance responding to political battles over nature, the environment, and climate change.

In a long essay, Tim Hollo of Green Music Australia explores the role of musicians in climate change action.¹⁵⁸ Providing an overview of the field, he observes:

The role of the creative industries – arts and artists – in helping to drive the changes in laws and behaviours that are necessary to tackle climate change, while not superficially obvious, is a deep one. Arts and artists of all kinds, as cultural practitioners, have been closely entwined with social change and social control since time immemorial, in large part because they help shape our understanding of the world, framing ideas, prefiguring change, and opening hearts and minds to new ways of thinking. They have played a major role in campaigns for law reform on many issues, and climate change should be no exception. Indeed, with climate change increasingly being seen as a deeply cultural issue, and its solutions as cultural ones to do with changing the way we understand our world and our place in it, the role of cultural practitioners in helping to address it should also increasingly be seen as central.¹⁵⁹

¹⁵⁸ Tim Hollo, *Key Change: The Role of the Creative Industries in Climate Change Action*, Canberra: Green Music Australia, 2014.

¹⁵⁹ Ibid.

Hollo suggests that ‘the arts have already played a role in this movement for change, albeit one which is surprisingly limited’.¹⁶⁰ He contends that ‘there is an important function for the arts in framing climate change and climate action, priming people to accept those frames, triggering emotional engagement with the issue, and bringing the distant problems and inconceivable solutions close to home’.¹⁶¹ Hollo observes that ‘the arts can assist through their long practice of bringing issues to public attention in such a way as to recruit and mobilise support for action, building identity amongst people in a way that helps create and maintain a strong movement for change’.¹⁶² He suggests that ‘there is a critically important role for the arts in helping to reshape our culture so it can face up to the challenge, in leading by example and embodying cultural change, as well as simply by embodying values that support and buttress care for each other and the environment which sustains us.’¹⁶³

In the United States, the Hip Hop Caucus has been active on issues about the environment and climate justice.¹⁶⁴ The group explains its history of political engagement:

The Hip Hop Caucus has been aligned with the environmental movement since 2005 when we were working on the ground in the Gulf Coast and in Washington DC to fight for a fair and just response to the destruction caused by Hurricane Katrina. No moment has so clearly shown the world who suffers first and worst – the poor and people of color – from the devastation of natural disasters caused by extreme weather patterns, which are increasing because of global warming. Since 2005 and 2006, the Hip Hop Caucus has evolved into a leading environmental organization participating in campaigns

¹⁶⁰ Ibid.

¹⁶¹ Ibid.

¹⁶² Ibid.

¹⁶³ Ibid.

¹⁶⁴ The Hip Hop Caucus, ‘Environmental Justice and Climate Change’, <http://www.hiphopcaucus.org/environmental-justice-and-climate-change/index.php>

for clean air and water, for comprehensive climate and clean energy legislation, for an end to the fossil fuel economy, and in opposition to iconic battles like the proposed KXL pipeline.

In 2013 the Hip Hop Caucus' *Environmental Justice and Climate Change* program area focused upon three themes. First, the group will call for 'Black institutions, such as Historically Black Colleges and Universities, to divest from the fossil fuel industry, and calling on African American leading organizations and African American elected officials to stop accepting financial contributions from these companies.'¹⁶⁵ Second, the Hip Hop Caucus will engage in 'Organizing on Black colleges, with Black churches and mosques, and using Black media, to engage new people in the environmental justice and climate movement.'¹⁶⁶ Third, the Hip Hop Caucus will create 'materials and resources that illustrate how environmental issues impact the daily lives of people of color, with a particular focus on health impacts of pollution, the same pollution that comes from extracting and burning fossil fuels that are causing climate change.'¹⁶⁷ In 2014, the Hip Hop Caucus released an album of environmental anthems.¹⁶⁸

¹⁶⁵ Ibid.

¹⁶⁶ Ibid.

¹⁶⁷ Ibid.

¹⁶⁸ The Hip Hop Caucus, *Home*, 2014,

http://en.wikipedia.org/wiki/HOME_%28Hip_Hop_Caucus_album%29

In 2014, Neil Young released a protest song entitled, ‘Who’s Gonna Stand Up? (And Save the Earth).’¹⁶⁹ The singer-songwriter sings about the No Keystone XL Pipeline protest; the fossil fuel divestment campaign; and the anti-fracking movement:

Ban fossil fuel, draw the line

Before we build, one more pipeline

Ban fracking now, save the waters

*And build a life, for our sons and daughters*¹⁷⁰

Neil Young celebrates environmental activism and climate activism, ‘Who’s gonna stand up and save the earth?/ This all starts with you and me.’¹⁷¹

The Australian Singer-Songwriter Missy Higgins has been a champion of fossil fuel divestment. She commented:

At the moment we live in a world that is almost completely dependent on fossil fuels. Our entire society is structured like that, there’s not much getting around it unless you want to quit your job and live like a hermit (which obviously isn’t going to help anyone right now). What is going to help is if we invest in alternatives and put effort and resources into working towards a renewable-energy future.

Because quite simply, if we do have a future as a planet, it has to be with renewable energy. Just ask every respected scientist in the world right now. There are endless potential jobs in the renewable

¹⁶⁹ Neil Young, ‘Who’s Gonna Stand Up? (And Save the Earth?)’, *Storytone*, 2014. Sean Michaels, ‘Neil Young Releases Three Versions of Environmental Protest Song’, *The Guardian*, 26 September 2014, <http://www.theguardian.com/music/2014/sep/26/neil-young-releases-three-versions-of-environmental-protest-song>

¹⁷⁰ Ibid.

¹⁷¹ Ibid.

sector, we just have to invest the money into creating them. But there are no jobs on a dead planet. To me, that's almost as simple as the argument has become. So that's where I want my money to go. Towards the future of a healthy planet. Towards an actual future for our kids.¹⁷²

Higgins commented: 'I support the Divestment movement because the most powerful way I can see to make a difference is with my own dollar.' She stressed that this was a matter of free choice: 'That's a choice no-one can take away from any of us: how we spend our own money'.¹⁷³ Higgins supported the divestment decisions of universities, schools, and religious institutions. She encouraged her audience to engage with questions of climate change: 'Don't be bullied into silence. There is too much denial and fear being bandied about for the good people to be quiet.'¹⁷⁴ There have been a number of other musicians who have followed suit, and supported fossil fuel divestment – including John Butler, Rob Hirst from Midnight Oil, and Ash Grunwald.¹⁷⁵

In 2015, it was announced that there would be a Live Earth concert on the 18 June 2015 to be a musical catalyst for demands for climate action at the Paris Climate Talks.¹⁷⁶ The event was launched by Al Gore; the musical director will be Pharrell Williams; and the producer will be

¹⁷² Missy Higgins, 'Happy Divestment Day', Facebook 22 October 2014, <https://www.facebook.com/missyhiggins/posts/10152355486292691>

¹⁷³ Ibid.

¹⁷⁴ Ibid.

¹⁷⁵ Tim Hollo, 'Musicians Sign on to Amplify Fossil Fuel Divestment', *Renew Economy*, 12 February 2015, <http://reneweconomy.com.au/2015/musicians-sign-amplify-fossil-fuel-divestment-84026>

¹⁷⁶ Richard Ingham, 'Pharrell Williams and Al Gore Announce Live Earth Climate Concert – And It Will Include Sydney', *The Sydney Morning Herald*, 22 January 2015, <http://www.smh.com.au/entertainment/music/pharrell-williams-and-al-gore-announce-live-earth-climate-concert--and-it-will-include-sydney-20150122-12vdre.html>

Kevin Wall. The event will take place in a number of venues – including, China; Sydney, Australia; Rio de Janeiro, Brazil; Cape Town, South Africa; New York City in the United States; and Paris, France. Some commentators have had qualms about Live Earth. Michael Hann wondered whether the event would be a driver of social change.¹⁷⁷

4. Dramatic Works

Peter Gingold – who founded Tipping Point - has posed a number of questions about culture and climate change. He asked:

Does going to a gallery or a performance influence people to make radical change? My guess is that, taken singly, it probably does not, but that a really sustained barrage of stories, images and visions will. We desperately need the help of the most creative people around... to help us understand what is going on.¹⁷⁸

In the fields of theatre, drama, and performance, there have been a number of creative responses to the dilemmas and conundrums of climate change.

¹⁷⁷ Michael Hann, 'Live Earth's Organisers are Wrong: Music Can only Soundtrack Change', *The Guardian*, 22 January 2015, <http://www.theguardian.com/music/musicblog/2015/jan/21/live-earth-organisers-wrong-music-can-only-soundtrack-change>

¹⁷⁸ Geoffrey Lean, 'A Cold Climate in the Arts World: When Will Culture Answer the Call to do Something about Climate Change', *The Telegraph*, 1 June 2012, <http://www.telegraph.co.uk/earth/environment/9305638/A-cold-climate-in-the-arts-world.html>

The playwright Steve Walters has posed the question, ‘Can theatre do anything about climate change?’¹⁷⁹ Thinking about his own play *The Contingency Plan*, he commented that ‘Theatre thrives on topicality’.¹⁸⁰ Steve Walters observed: ‘But for most of us, climate change is still something on the to-do list, rather than a real and present danger.’¹⁸¹ He considered the range of dramatic responses to the disasters of climate change:

Too often, attempts to dramatise our environmental situation leap from out of our current muddle and into stark scenarios of catastrophe. *Mad Max* got there first with its post-oil dystopia, while Roland Emmerich has taken out a franchise on disaster porn. Even sublime works such as Cormac McCarthy's *The Road* jump from our present confusion into the morally simplified landscape of survivalism. As Robert Butler argued on this very blog, it's only this year, with plays from Andrew Bovell's *When the Rain Stops Falling* to Nick Payne's brilliant comedy *If There Is I Haven't Found It Yet*, that we're starting to show climate change as something happening in the present, rather than as a distant prospect.¹⁸²

Walters observed that there are temporal difficulties in writing about a topic as fast-moving as climate change: ‘This is the awful conundrum of writing about the worst – you want more than anything for it not to come true, yet at the same time, as it does so, you feel vindicated’.¹⁸³ He observed: ‘The best part of me hopes to see my play proved irrelevant or a

¹⁷⁹ Steve Walters, ‘Can theatre do anything about climate change?: Forget stories about global apocalypse. We need drama that gets real about global warming, from Cockermouth to Copenhagen’, *The Guardian*, 9 December 2009, <http://www.guardian.co.uk/stage/theatreblog/2009/dec/09/theatre-climate-change>

¹⁸⁰ Ibid.

¹⁸¹ Ibid.

¹⁸² Ibid.

¹⁸³ Ibid.

bleak period piece; the worst wants to see its nightmares borne out.’¹⁸⁴ Walters noted that ‘Ezra Pound famously described literature as "news that stays news"’.¹⁸⁵ He observed that ‘the sheer tempo at which contemporary history moves tends to undermine our sense of the facts.’¹⁸⁶ Walters envisaged: ‘Nowadays, it seems that simply describing the world has become a political act.’¹⁸⁷

In his play, *The Contingency Plan*, Steve Walters puts his theories about drama and climate change into theatrical practice.¹⁸⁸ He has observed: ‘There is something genuinely tragic about the whole question of climate change’.¹⁸⁹ He commented: ‘Whilst we know there are political ramifications, we know people are responsible, we know there’s culpability and all of that, at the same time it is a genuine tragedy to me in the sense that it’s something that we’ve all inherited, it’s something that we didn’t necessarily set into motion knowingly and it’s disproportionate in its impact’.¹⁹⁰ He noted: ‘The thing that interested me in the play was how do [scientists] speak to government and how does government speak to them.’¹⁹¹ The play tells the story of a glaciologist, Will Paxton, who returns from Antarctica to take up a role in the United Kingdom Government. The play considers how this protagonist deals with

¹⁸⁴ Ibid.

¹⁸⁵ Ibid.

¹⁸⁶ Ibid.

¹⁸⁷ Ibid.

¹⁸⁸ Steve Waters, *The Contingency Plan: On the Beach and Resilience*, London: Nick Hern Books, 2009.

¹⁸⁹ Robert Butler, ‘First Climate Change Play Started with James Lovelock’, the Ashden Directory, 2009, http://www.ashdendirectory.org.uk/featuresView.asp?pageIdentifier=2009122_59406680

¹⁹⁰ Ibid.

¹⁹¹ Ibid.

Tory government responses to flooding, storm surges, and rising seas across the United Kingdom. In a dramatic speech, Will Paxton observes:

Okay, for years I was told by my father that our leaders, our representatives, were ignorant, self-interested, cynical, obsessed with their careers, their egos, indifferent to the truly great questions, immune to the drama of the natural world, innumerate, utterly shallow. For a while I argued against that. I did. Coming here, coming here was my response to what he said. I felt the stakes were too high, truly, to think what he thought. So I came here and I broke their hearts and that's my problem. But here, tonight, you've confirmed everything they said and not only that, you've made the charge sheet far, far longer. Because you're indolent. Because you're ignorant. Because you're totally fucking lethal.¹⁹²

The play considers the manifestations of climate change, and whether the United Kingdom Government will be well-prepared for extreme weather and disasters. Waters has suggested that it is an Ibsen-like play about the way the past impacts upon the present: 'This sense of there being this long secret waiting to be discovered under the ice or in the atmosphere and it then was discovered too late and responded to too late.'¹⁹³

The scientist Stephen Emmott has explored the impacts of population upon sustainability in a play entitled *Ten Billion*.¹⁹⁴ In his monologue, he explores the dramatic changes in respect of climate change:

¹⁹² Steve Waters, *The Contingency Plan: On the Beach and Resilience*, London: Nick Hern Books, 2009, 167-168.

¹⁹³ Robert Butler, 'First Climate Change Play Started with James Lovelock', the Ashden Directory, 2009, http://www.ashdendirectory.org.uk/featuresView.asp?pageIdentifier=2009122_59406680

¹⁹⁴ Stephen Emmott, *10 Billion*, London: Penguin Books, 2013.

The climate is one of the Earth's fundamental life support systems, one that determines whether or not we humans are able to live on this planet. It is generated by four components:

- * the atmosphere (the air we breathe);
- * the hydrosphere (the planet's water);
- * the cryosphere (the ice sheets and glaciers);
- * the biosphere (the planet's plants and animals)

By now, our activities had started to modify every one of these components. Our emissions of CO₂ started to modify our atmosphere. Our increasing water use had started to modify our hydrosphere.

Rising atmospheric and sea-surface temperature had started to modify the cryosphere, most notably in the unexpected shrinking of the Arctic and Greenland ice sheets.

Our increasing use of land, for agriculture, cities, roads, mining – as well as all the pollution we were creating – had started to modify our biosphere.

Or, to put it another.¹⁹⁵

Emmott is particularly concerned about the radical transformation of the earth by man-made climate change: 'The biggest and most important experiment on Earth is the one we're all conducting, right now, on Earth itself.'¹⁹⁶ He observed that 'we could change the situation we are now in' – 'probably not by technologizing our way out of it, but by radically changing our behaviour.'¹⁹⁷ He laments that 'there is no sign that this is happening, or about to happen'.¹⁹⁸ In his view, 'I think it's going to be business as usual for us.'¹⁹⁹

¹⁹⁵ Ibid., 32-33.

¹⁹⁶ Ibid., 193.

¹⁹⁷ Ibid., 193.

¹⁹⁸ Ibid., 193.

¹⁹⁹ Ibid., 193.

Theatre critic, Robin McKie, was enthusiastic about *10 Billion*.²⁰⁰ He said that it ‘is the most effective theatrical work that has attempted to illustrate our planet's environmental woes that I have seen’.²⁰¹ In his view, ‘It is spare, chilling, moving and cunningly staged and unravels with compelling, impeccable logic.’²⁰² McKie maintains that ‘previous theatrical attempts to tackle the issues of global warming, rising sea levels and the ecological mayhem we face have been confused and tame.’²⁰³

There have been a number of Australian plays, which have grappled with climate change. Andrew Bovell’s *When the Rain Stops Falling* explores obliquely the human costs of catastrophic climate change.²⁰⁴ His time-jumping play imagines a world, in which fish have disappeared, and become a luxury.²⁰⁵ Bovell is interested in questions of inter-generational justice. He is interested in the concept that ‘You have no right to take away someone's future.’²⁰⁶ Hannie Rayson’s play *Extinction* is another Australian play dealing with climate

²⁰⁰ Robin McKie, ‘Climate change: how theatre delivered a dramatic warning about the planet's future: Ten Billion – a scientist's one-man show on environmental woes – has been an unexpected sell-out hit’, *The Observer*, 12 August 2012, <http://www.guardian.co.uk/commentisfree/2012/aug/12/robin-mckie-climate-change-dangers>

²⁰¹ Ibid.

²⁰² Ibid.

²⁰³ Ibid.

²⁰⁴ Andrew Bovell, *When the Rain Stops Falling*, London: Nick Hern Books, 2009.

²⁰⁵ Charles Isherwood, ‘Fish Soup and Bad Weather, Across the Decades’, *The New York Times*, 9 March 2010, http://theater.nytimes.com/2010/03/09/theater/reviews/09when.html?_r=0

²⁰⁶ Lyn Gardiner, ‘Green shoots of climate-change theatre’, *The Guardian*, 22 May 2009, <http://www.theguardian.com/stage/theatreblog/2009/may/22/climate-change-theatre>

change.²⁰⁷ The work tells the story of a coal baron, Harry Jewell, who hits an endangered tiger quoll on the Great Ocean Road. Rayson observes: ‘No one in this play is wicked. No one is entirely virtuous. What unites them all is the one urgent question, in the age of global warming, how are we to live?’ Her work is concerned about the threat of extinction – much like Elizabeth Kolbert does in her book, *The Sixth Extinction: An Unnatural History*.²⁰⁸

Lyn Gardiner is hopeful that ‘environmental drama can be engaging and interesting, without dumbing down or reverting to didacticism.’²⁰⁹ She hopes for the development of climate change comedy: ‘It’s comedy, after all, that dramatises the gap between what we think is happening and what is actually happening’.²¹⁰ She suggests: ‘After 20 years of issuing warnings, some climatologists probably reckon farce is the most appropriate way to address the situation.’²¹¹

5. Documentaries

²⁰⁷ Hannie Rayson, *Extinction*, Manhattan Theatre Club, 2012, <http://www.bsstc.com.au/season-2015/extinction/>

²⁰⁸ Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History*, New York: Henry Holt & Company, 2014.

²⁰⁹ Lyn Gardiner, ‘Green shoots of climate-change theatre’, *The Guardian*, 22 May 2009, <http://www.theguardian.com/stage/theatreblog/2009/may/22/climate-change-theatre>

²¹⁰ Ibid.

²¹¹ Ibid.

Davis Guggenheim's 2006 Academy Award-winning documentary *An Inconvenient Truth* about the work of Al Gore has been influential in terms of politics, law, and film-making.²¹² The work won a huge number of awards.²¹³ The producer Lawrence Bender recalls the transformation of Al Gore's slide show into a documentary:

One of the big things that Davis brought to the movie was making Al's slides more visual — he made them move, for instance, where before they were static. He incorporated a beautiful color palette. That took time. But on the day before we were all set to shoot the presentation — the one that weaves throughout the whole movie — Al comes in and says he'd just gotten these extraordinary slides, and he showed them to us, and we were like, "OK, we have to put these in the movie." But we're on this hard, hard deadline. So basically the crew and our co-producer Lesley Chilcott stayed up the entire night reworking and reformatting everything to make sure the slides were ready for the shoot the next morning.²¹⁴

The work has been involved in a number of legal skirmishes.²¹⁵ Al Gore's Academy Award-winning *An Inconvenient Truth* has encouraged a wide range of environmental and climate storytelling using the medium of documentaries.

²¹² Davis Guggenheim (Director), *An Inconvenient Truth*, Lawrence Bender Productions, 2006, http://www.imdb.com/title/tt0497116/?ref=nm_flmg_dr_16

²¹³ Al Gore, 'An Inconvenient Truth: Awards', 2006, <http://www.nytimes.com/movies/movie/342290/An-Inconvenient-Truth/awards>

²¹⁴ Grist Staff, 'A Chat with Inconvenient Truth Co-Producer and Hollywood Bigwig Lawrence Bender', 7 March 2007, <http://grist.org/article/bender/>

²¹⁵ See Matthew Rimmer, *Intellectual Property and Climate Change: Inventing Clean Technologies*, Cheltenham (UK) and Northampton (Mass.): Edward Elgar, September 2011.

Josh Fox has depicted the rise of the gas industry in the United States with a series of documentaries, *Gasland*, and *Gasland Two*.²¹⁶ He has explained the inspiration for his films:

My father got a proposal in the mail to drill for natural gas on my family home in Pennsylvania. They wanted to use this new technique called hydraulic fracturing or “fracking.” Halliburton invented this technique, which involves pumping water and toxic chemicals into the ground at extremely high pressures to fracture rock formations, which hold natural gas. It’s an extreme measure for gas development. Previously, you would drill down until you hit a pocket of gas and capture it as it rises. With fracking they pulverize the rocks with the pressure of a cluster bomb. I didn’t know any of this stuff when I started. When we got the proposal in the mail, we started looking around to all the other leasing that was being done and saw that 80,000 acres had been leased in the Delaware River basin. I started to wonder how it was that we were all of a sudden in a gas drilling area when before we were never in any kind of industrial development area. It was worrisome and disturbing. It’s a watershed area. It’s beautiful, scenic and amazing. On the other hand, they were offering us \$100,000 for the lease and potentially a lot more. Then I discovered that 50% of New York state was being leased. 60%-65% of Pennsylvania was being leased. That meant that land was being turned over at an alarming rate to the gas companies for exploration and if they drilled all those areas, this would be utterly transformative of the entire Northeast. I needed to find out what this process entailed.²¹⁷

The documentaries have provided a cinematic representation of the energy revolution in the United States.²¹⁸ The work has become part of popular culture – even featuring on *The*

²¹⁶ Josh Fox (director and writer), *Gasland*, HBO Documentary Films, 2010, http://www.imdb.com/title/tt1558250/?ref=nm_knf_t1 and Josh Fox (director and writer), *Gasland – Part II*, HBO Documentary Films, 2013, http://www.imdb.com/title/tt2795078/?ref=nm_knf_t2

²¹⁷ ‘Josh Fox and Gasland’, Documentary Summit, <http://www.documentarysummit.com/free-expert-interviews/josh-fox-and-gasland/>

²¹⁸ Gregory Zuckerman, *The Frackers: The Outrageous Inside Story of the New Energy Revolution*, London: Penguin Books, 2013.

Simpsons. Such has been the popular success of the documentaries that they have attracted much vehement criticism from the gas industries.²¹⁹

In Australia, the success of *Gasland* and *Gasland II* has been followed by *Frackman*.²²⁰ This documentary tells the tale of Dayne Pratzky and his struggle with gas companies in Queensland. The film has been shown throughout Australia.²²¹ There has been much disquiet in Australia over coal seam gas.²²² The Lock the Gate movement has been an alliance between farmers and environmentalists against the introduction of coal mining, and coal seam gas.

The case of Tim de Christopher – a climate activist engaged in civil disobedience - was captured in the documentary *Bidder 70*.²²³ DeChristopher - known as Bidder 70 - protested a Bureau of Land Management oil and gas lease auction by successfully bidding on 14 parcels of land, without any intention of paying for the purchases. DeChristopher argued: “I want you to join me in valuing this country’s rich history of nonviolent civil disobedience.” DeChristopher was convicted of an indictment; and sentenced for two years. On appeal, the

²¹⁹ Kevin Grandia, ‘Who Are the Spindoctors Behind the Attack on Gasland?’, *Huffington Post*, 22 June 2010, http://www.huffingtonpost.com/kevin-grandia/who-are-the-spindoctors-b_b_621190.html

²²⁰ Richard Todd and Jonathan Stack (Directors), *Frackman*, 2014, <http://www.imdb.com/title/tt3557446/>

²²¹ Staff Writer, ‘Dayne Pratzky, Coal Seam Gas Crusader and Maker of the Movie “Frackman”, is the Aussie Hero You’ve Never Heard of’, *News.Com.Au*, 15 March 2015, <http://www.news.com.au/entertainment/movies/dayne-pratzky-coal-seam-gas-crusader-and-maker-of-the-movie-frackman-is-the-aussie-hero-youve-never-heard-of/story-fnk850z8-1227263376204>

²²² Paddy Manning, *What the Frack? Everything You Need to Know About Coal Seam Gas*, Sydney: New South, 2012.

²²³ Beth Gage and George Gage (Directors), *Bidder 70*, 2012, http://www.imdb.com/title/tt2085759/?ref=fn_al_tt_1

judge noted that “mixed in with his argument about selective prosecution, Defendant raises the spectre of retaliatory sentencing”. The judge observed that the “Defendant’s statements that he would ‘continue to fight’ and his view that it was ‘fine to break the law’ were highly relevant to these sentencing factors”. The climate activist was released from Federal Prison after 21 months of imprisonment.

Do the Maths was a short documentary about the work of Bill McKibben and 350.org in respect of fossil fuel divestment.²²⁴

The Years of Living Dangerously is a lavish nine-part documentary series produced for Showtime.²²⁵ The executive producers included James Cameron, Jerry Weintraub, Arnold Schwarzenegger and Daniel Abbasi.²²⁶ Joel Bach and David Gelber were co-creators of the series, as well as executive producers. The documentary series features actors and celebrities, such as Harrison Ford, Matt Damon, Jessica Alba, and Olivia Mann. The series also includes journalists like Thomas Friedman, Chris Hayes, and Lesley Stahl. There are interviews with climate scientists, such as Katharine Hayhoe. The episodes explore the impacts of extreme weather – including drought; bushfires; hurricanes; ocean acidification; and rising seas. The series highlights the economic and environmental effects of fossil fuels. The work also explores the potential of renewable energy – such as solar and wind. The final episode features an interview with President Barack Obama. The series won an Emmy for best documentary.

²²⁴ Jimmy Morrison, *Do the Math*, Relic, 2013, http://www.imdb.com/title/tt2853094/?ref=fn_al_tt_1

²²⁵ Joel Bach and David Gelber (co-creators), *The Years of Living Dangerously*, The Years Project, 2014, <http://www.imdb.com/title/tt2963070/>

²²⁶ Ibid.

The maker of *Food Inc.*, Robert Kenner, adapted *Merchants of Doubt* by Naomi Klein and Erik Conway into a documentary in 2014.²²⁷ He was interested in exploring industry obfuscation. Kenner has observed that it is a film about deception; inconvenient science; and about how we are deceived.²²⁸ Kenner has explained his approach to storytelling in respect of *Merchants of Doubt*:

With *Food, Inc.* we were able to cut across political boundaries, which was extremely exciting. With this new film, I think we've built on that style by telling our story through an unexpected cast of characters and from an angle that audiences will not have seen before. This film is about a business of deception that's spanned multiple industries—from tobacco, to chemicals, to pharmaceuticals. On each of these issues the harms caused have been immense — but nowhere are the stakes higher than with climate change. The changes we're witnessing to our atmosphere will affect every person on earth and will be irreversible if they take hold. It's been amazing to see how a small handful of people have helped tipped the scales and prevented action on these critically important issues.²²⁹

Kenner was intrigued by the connections drawn by Oreskes and Conway about similarities in industry denial: 'A favorite and ubiquitous theme is this idea that our freedoms are being threatened'.²³⁰ He observed: 'We saw that when smoking bans were first introduced, we've seen it with food labelling, and we're seeing it today with opposition to climate regulations'.

²²⁷ Robert Kenner (Director), *Merchants of Doubt*, Participant Media, 2014, http://www.imdb.com/title/tt3675568/?ref=nm_sr_1

²²⁸ Variety, "'Merchants of Doubt' Interview – Director Robert Kenner", 11 September 2014, <https://www.youtube.com/watch?v=w-1YGjJulFw>

²²⁹ Scott McCauley, 'Five Questions for Merchants of Doubt Director Robert Kenner', *Filmmaker*, 10 September 2014, <http://filmmakermagazine.com/87473-5-questions-for-merchants-of-doubt-director-robert-kenner/>

²³⁰ Ibid.

Kenner noted that there are commonalities in the tactics: ‘They may choose slightly different words, but it’s all about using fear to stop us from taking action.’²³¹

Kenner was also interested in exploring the motivations of climate change denial. He was shocked by how frank and candid a number of the industry actors were. Kenner observed:

Ultimately, there are multiple motivations. One is economics: it’s hard for people to walk away from money. Oil and coal companies don’t want to leave their profits in the ground, so science that says they’re creating climate change is very inconvenient for them.

But on a more personal level, denial also becomes ideological, which is the heart of Naomi Oreskes and Erik Conway’s book. In the film, Oreskes says, “this isn’t about the science, it’s a political debate about the role of government,” and I think that’s exactly right. If you’ve decided that government is never the answer, then what do you do with a huge problem like climate change where government action is needed? Often times it’s easier to simply deny the problem than question our own beliefs.

What’s more, as Michael Shermer points out, we’re tribal beings and we tend to think like the people around us. There are consequences to going against your friends and peers, and if your team says that climate change isn’t real, that’s difficult to overcome.

Perhaps most universal of all though—none of us wants to change. We have an amazing standard of living thanks to fossil fuels, and who wants to think about giving any of that up?²³²

Kenner was inspired by the film *Thank You For Smoking*.²³³ He sought to find an entertaining style to tell the story – rather than an earnest one. Kenner said that he was interested in adopting an ironic tone, which highlighted the gap between the spin of industry deniers and

²³¹ Ibid.

²³² Ibid.

²³³ Jason Reitman, *Thank You for Smoking*, Room 9 Entertainment, 2006, <http://www.imdb.com/title/tt0427944/>

the science. He used the metaphor of magic tricks as a means of analysing the work of spin doctors.²³⁴

Climate deniers have been enraged by the popular success of the documentary, *Merchants of Doubt*.²³⁵

Naomi Klein's new book *This Changes Everything: Capitalism vs The Climate* is being adapted into a documentary by Avi Lewis in 2015.²³⁶ The pitch for the documentary emphasized:

The film brings Naomi Klein's radical, inspiring thesis to life through a connective thread of stories from people living and working on the front lines of change. *This Changes Everything* is an invitation to viewers to consider the seemingly impossible: that the changes the climate crisis demands of us may not be a punishment to fear, but a chance to rebuild our broken political and economic systems into alternatives that improve our quality of life, well-being and connectedness to one another. The documentary was filmed over three years in the US, Canada, China, El Salvador, Greece, and

²³⁴ Jessica Goldstein, 'Professional Deceivers: People Who Can Convince You a Garbage Man Knows More Science than a NASA PhD', *Think Progress*, 10 September 2014, <http://thinkprogress.org/culture/2014/09/10/3565769/merchants-of-doubt-director-deception-climate-change/>

²³⁵ David Biello, 'How to Win Friends and Bamboozle People About Climate Change', *Scientific American*, 6 March 2015, <http://www.scientificamerican.com/article/how-to-win-friends-and-bamboozle-people-about-climate-change/> Edward Helmore, 'The Film that Reveals How American "Experts" Discredit Climate Scientists', *The Observer*, 15 March 2015, http://www.theguardian.com/environment/2015/mar/15/climate-change-denial-florida--global-warming-naomi-oreskes-interview?CMP=share_btn_tw; and Evan Lehmann, 'Merchants of Doubt Emails Spark Fiery Debate About Strategies of Climate Skeptics', *ClimateWire*, E&E Publishing, 9 March 2015, <http://www.eenews.net/stories/1060014671>

²³⁶ *This Changes Everything: The Documentary*, <http://thischangeseverything.org/the-documentary/>

India. Images from the film are featured in the book trailer for Naomi Klein's *This Changes Everything*, and throughout this website.²³⁷

There have been a number of challenges in adapting a 500-page book into a 2 hour documentary.²³⁸

6. Film

In addition to the growth in environmental documentaries, there has also been a rise in climate cinema.²³⁹ Tamara Lush has observed: "Cli-fi" movies have emerged as a niche genre, taking the pomp of doomsday science-fiction flicks and mixing it with the underlying message of environmental awareness.²⁴⁰ Dan Bloom has highlighted the potential of the genre: 'We need to go beyond abstract, scientific predictions and government statistics and try to show the cinematic or literary reality of a painful, possible future of the world climate changed'.²⁴¹

The magic realist film *Beasts of the Southern Wild* has been one of the most powerful cinematic responses to climate change.²⁴² The film tells the story of six year-old Hushpuppy

²³⁷ Ibid.

²³⁸ Michael Wekerle, 'Naomi Klein and Avi Lewis on Adapting This Changes Everything', CBC Radio, 9 January 2015, <http://www.cbc.ca/q/blog/2015/01/09/naomi-klein-avi-lewis/>

²³⁹ Tamar Lush, 'Climate Change Inspires Cli-Fi Flicks', Associated Press, 7 November 2014, <http://bigstory.ap.org/article/f1a1dd30f7d1442090b9fc07585cd451/climate-change-inspires-rise-cli-fi-flicks>

²⁴⁰ Ibid.

²⁴¹ Ibid.

²⁴² Benh Zeitlin (Director and Writer), and Lucy Alibar (Writer), *Beasts of the Southern Wild*, 2012, <http://www.imdb.com/title/tt2125435/>

– played by Quvenzhane Wallis – a child who lives in a bayou community called The Bathtub, which is under threat from rising sea levels, the melting polar caps, and the arrival of mythical creatures called the aurochs. She lives with her father, Wink, played by Dwight Henry – who is in fading health. In the conclusion to the film, Hushpuppy reflects:

When it all goes quiet behind my eyes, I see everything that made me lying around in invisible pieces. When I look too hard, it goes away. And when it all goes quiet, I see they are right here. I see that I'm a little piece in a big, big universe. And that makes things right. When I die, the scientists of the future, they're gonna find it all. They gonna know, once there was a Hushpuppy, and she live with her daddy in the Bathtub.²⁴³

The film explores themes of loss, struggle, and resilience. Hushpuppy says at one point in the film: 'Everybody loses the thing that made them. It's even how it's supposed to be in nature. The brave men stay and watch it happen, they don't run.'²⁴⁴

In a discussion about the film, Benh Zeitlin observed that the Bathtub was inspired by how southern parts of the United States had been affected by extreme weather:

It's not based, it's not a direct version, it's a heightened fantastical place. But there is a town that is undergoing very similar circumstances called Isle de Jean Charles [in south Louisiana], which is where we shot the film. A lot of the environmental issues the town is facing are in the movie, so it's a parallel.... I've never actually been in the city for a storm [New Orleans], but I was there right before

²⁴³ Ibid.

²⁴⁴ Ibid.

[Hurricane Katrina], then I've been living down there for about six years. It's certainly a part of your life if you're living down there.²⁴⁵

He reflected: 'The part of New Orleans where I live has certainly come back, it's not completely rebuilt or anything, but certainly the cloud of the storm has lifted, there's a real resurgence of culture, a vitality that's returned that wasn't there a couple of years after the storm.'²⁴⁶ Zeitlin observed that the film was about resilience in the face of climate change: 'It's not a place where people are going to be defeated or crushed. They're always going to fight for their homes. It's always going to come back. It's not a culture that's going to give up. It's a wonderful, vibrant place to live.'²⁴⁷

Benh Zeitlin explained that the film sought to use its specific location to explore larger planetary problems:

For me, it was very centred on the region, but I certainly think there's something in the film – you know, places where people are really in sync with the environment and attached to the land, living off the land, in harmony with nature, are becoming increasingly few and are increasingly threatened both by the way we treat the planet and also by the way the world is becoming a global place. These sort of isolated communities that the film imagines are definitely becoming renegade states. It's not meant to be a literal or political film, or anything like that, it's much more of a fable, a folk tale about a people who are undergoing a collapse of their world.²⁴⁸

²⁴⁵ Ed Gibbs, 'Benh Zeitlin Talks Beasts of the Southern Wild: Empire's Ed Gibbs Caught up with the Award-Winning Director to Discuss his Landmark Feature Debut', 8 October 2012.

²⁴⁶ Ibid.

²⁴⁷ Ibid.

²⁴⁸ Ibid.

Zeitlin commented that the film transcended the usual divisions between the political left and right: ‘I think this film isn’t part of either of those ideologies.’²⁴⁹ He commented: ‘If anything, there’s been people who are threatened by the themes the film is about: independence, a town that’s completely outside of the government, of world commerce, of religion’. Zeitlin suggested ‘That independent mentality, of not wanting any kind of help from the government has threatened liberal thinkers as much as conservatives.’²⁵⁰

In 2014, there was even an award competition for films - the ‘Cliffies’ - made about climate change. The awards were designed to honour and celebrate environment-themed movies, and highlight the exceptional ones, which focus upon cli-fi. Dan Bloom has discussed his ambitions for the event.²⁵¹ He commented:

The Cliffies hopes to shine a bright Hollywood spotlight on the new crop of cli-fi movies from both major studios and independents. Among the Cliffies nominations are: “Snowpiercer” from South Korea, “Into the Storm” from Hollywood and “The Rover” from Australia. Awards will also be given to films that best highlighted current climate issues, and those that created the best marketing and PR strategies to raise awareness of the movies in relation to the very real issues of climate change and global warming. The Cliffies are not just about glamor and glitz — and movie stars and famous directors. The Cli-Fi Movie Awards intends to wake up the world about the very real and pressing issues humankind faces in regard to what may very well be the Climapocalypse some 30 to 50 generations from now.²⁵²

²⁴⁹ Ibid.

²⁵⁰ Ibid.

²⁵¹ Dan Bloom, ‘Cli-Fi Movie Awards to Honor Best Climate Themed Movies of 2014’, Ultimate Spelling, 11 September 2014, <http://www.ultimatespelling.com/cli-fi-movie-awards-to-honor-best-climate-themed-movies-of-2014-guest-post>

²⁵² Ibid.

The awards in 2014 were evenly distributed.²⁵³ The best cli fi move in 2014 went to *Snowpiercer*,²⁵⁴ a disturbing Korean dystopian thriller, set in a world destroyed by geoengineering. The other nominees included *Noah*; *Into the Storm*; *Interstellar*;²⁵⁵ *Young Ones*; and *The Rover*. Darren Aronofsky and Ari Handel were awarded best original screenplay for *Noah*. Robert Pattinson was named best actor for his performance in *The Rover*. Tilda Swinton received the award best actress for her role in *Snowpiercer*.

In a pyrotechnic essay, Scott Thill has sought to explain the appeal of ‘Cli-Fi’ with his piece ‘Cli-Fi is Real.’²⁵⁶ He observes that ‘Cli-fi is not a listicle of films or shows or books or whatever, which take so-called climate change - a political euphemism created to denature global warming's knockout punch - as their thematic center’.²⁵⁷ He observes that cli-fi helps represent our state of climate denial and escapism: ‘Speaking of sellouts, cli-fi is also the near-universal assent of scientists and their studies, which reactionaries laugh off as a hard

²⁵³ Dan Bloom, ‘Awards Given for Movies on Climate Change’, *San Diego Jewish World*, 3 November 2014, <http://www.sdjewishworld.com/2014/11/03/awards-given-movies-climate-change/>

²⁵⁴ Kate Arnonoff, ‘“Snowpiercer”: If You Care About Climate Change, This Sci Fi Thriller is For You’, *Yes! Magazine*, 7 July 2014, <http://www.yesmagazine.org/planet/snowpiercer-sci-fi-thriller-climate-change>

²⁵⁵ Amelia Urry, Eve Andrews, Sam Bliss and Ted Alvarez, ‘“Interstellar” Solves Climate Change By Incoherently Jetting into Space’, *Grist*, 7 November 2014, <http://grist.org/living/interstellar-solves-the-problems-of-a-ruined-earth-by-jetting-into-outer-space/> Catherine Shoard, ‘How *Interstellar* made Michael Caine Think about Climate Change’, *The Guardian*, 29 October 2014, <http://www.theguardian.com/film/2014/oct/29/interstellar-michael-caine-christopher-nolan-climate-change>

²⁵⁶ Scott Thill, ‘Cli-Fi is Real’, *The Huffington Post*, 30 October 2014, http://www.huffingtonpost.com/scott-thill/cli-fi-is-real_b_6072518.html

²⁵⁷ Ibid.

sell while they pocket payoffs from fossil fools trying to sustain the unsustainable hallucinations of the 20th century.’²⁵⁸ Thill comments that ‘That we have been sleepwalking through such massive destabilization for decades proves that we are much better at consensually hallucinating than we are at separating our sciences and fictions.’²⁵⁹ He comments: ‘Indeed, we rule at creating facts first as fictions, so we can resume our consuming ways, avoiding apocalyptic spoiler alerts.’²⁶⁰ Thill comments: ‘Cli-fi, like sci-fi and fantasy and spy-fi and psy-fi and so many more, is simply the cultural prism through which we monitor and experience ourselves as we bleed our planet dry while trying to become machines capable of continuing once our galactic luck runs out’.²⁶¹ He suggests: ‘So whether they begin as blockbusters, documentaries or scientific studies, cli-fi facts and fictions are continually in flux, as humanity goes about its death-dealing business as usual’. Thill concludes: ‘We have created a climate of terror and terraformation that is spinning out of control, and we don't want it to stop.’²⁶²

Conclusion

Over the past decade, we have come a long way from Bill McKibben’s concerns about the slow response of creative communities to the crisis of climate change.

As this survey highlights, there has been a steady growth in a range of cultural expression which address climate change. In the field of literature, there has been a rise of Climate

²⁵⁸ Ibid.

²⁵⁹ Ibid.

²⁶⁰ Ibid.

²⁶¹ Ibid.

²⁶² Ibid.

Fiction – ‘Cli-Fi’. Writer and critic Margaret Atwood has engaged with questions about the art of climate change. Ian McEwan’s *Solar* is an illustration of a literary work, engaging with climate change. Naomi Oreskes and Erik Conway have experimented with fiction – as well as history. There has also been an accompanying rise in non-fiction works dealing with climate change. In the field of art, there have been a number of creative responses to climate change. James Balog’s Extreme Ice Project has been particularly notable, with its photographic and cinematographic portraits of the retreat of glaciers. In the discipline of music, singers and songwriters have been writing new environmental anthems. The Hip-Hop Caucus has been a champion of climate activism. Live Earth has been a significant focal point for musical activism in respect of climate change. In respect of dramatic works, there has been a range of plays, responding directly and indirectly to the costs of climate change. Waters’ *The Contingency Plan*, Stephen Emmott’s *Ten Billion*, Andrew Bovell’s *When the Rain Stops Falling* and Hannie Rayson’s *Extinction* have been notable. In the wake of the success of the film *An Inconvenient Truth*, there has been a rise in documentary film-making about the environment and climate change. Climate fiction has also become a notable genre in respect of film-making. The cinematographic film, *Beasts of the Southern Wild* is a magic realist tale about climate resilience. This range of creative work responds to questions about climate law, ethics, and justice.

Creative expression about climate change has been caught up in larger politics. Such work is politically controversial. In Canada, climate artists have been blacklisted for criticising Stephen Harper’s Government over its environmental and climate policies.²⁶³ David Spratt has highlighted how the Coalition has engaged in a culture war in respect of climate policy:

²⁶³ Franke James, *Banned on the Hill: A True Story about Dirty Oil and Government Censorship*, The James Gang, 2013.

For this government, fighting enemies is more important than reality-based policy-making. This is about the politics of resentment, fear and revenge, about winning, and about debilitating the enemy. Culture wars are not primarily about policy detail, but about building legitimacy and establishing dominance.²⁶⁴

In the final days of the Australian election in 2013, the Conservative Coalition declared that certain taxpayer-funded grants for obscure research projects would be scrapped or redirected. In particular, the Coalition singled out the ‘role of public art in climate change’ as a topic unworthy of public funding. The *Daily Telegraph* reported that there would be a list of the types of grants that would no longer be funded under new and more stringent guidelines, including an RMIT project on *Spatial Dialogues: Public Art and Climate Change* which sought to explore how people could adapt to climate change through public art.²⁶⁵ Such an announcement maintains that art about climate change is frivolous, wasteful, or otherwise obscure. Such a directive also raises larger questions about the role of art and culture, the representation of the environment and climate change, academic freedom and independence, and the nature of public funding and grants. The Coalition Government has retreated from its vow to vet ‘ridiculous’ grants’. Nonetheless, it has retained its hostility to discourse of climate change – whether it be scientific discussion, or creative expression.

In spite of such detractors, creative expression about climate change has been a powerful means of framing scientific developments in respect of climate change, and the concomitant human costs. The role of culture in the climate debates in many and varied. A number of

²⁶⁴ David Spratt, ‘The Abbott Government: Climate Policy as Culture War’, *Renew Economy*, 6 November 2013, <http://reneweconomy.com.au/2013/abbott-government-climate-policy-culture-war-87528>

²⁶⁵ Simon Benson, ‘Abbott Vows to Cut Futile Research’, *The Daily Telegraph*, 5 September 2013, <http://www.dailytelegraph.com.au/news/nsw/abbott-vows-to-cut-futile-research/story-fni0cx12-1226710934260>

creative works serve a documentary function. They seek to report upon present developments and manifestations of climate change, with a journalistic rigour. Other works are fantastic, and engage in speculative fiction, magic realism, and science fiction, and imagine the future of climate change. Creative expression about climate change often has a political function. There has been an effort to challenge climate denial and misinformation – such as greenwashing, astroturfing, and climate mistruths. There has been a significant use of climate culture to engage AdBusting, culture-jamming, and debunking of fossil fuel propaganda. Creative artists have also pointed towards tangible political and legal reform. The fossil fuel divestment movement has been promoted by creative ambassadors. Cultural events have sought to promote international climate action – particular in 2015, with the international climate summit in Paris.

Biography

Dr Matthew Rimmer is taking up the position of Professor in Intellectual Property and Innovation Law at the Queensland University of Technology (QUT) in 2nd Semester, 2015.

Dr Matthew Rimmer is an Australian Research Council Future Fellow, working on Intellectual Property and Climate Change. He is an associate professor at the ANU College of Law, and an associate director of the Australian Centre for Intellectual Property in Agriculture (ACIPA). He holds a BA (Hons) and a University Medal in literature, and a LLB (Hons) from the Australian National University, and a PhD (Law) from the University of New South Wales. He is a member of the ANU Climate Change Institute. Dr Rimmer is the author of *Digital Copyright and the Consumer Revolution: Hands off my iPod*, *Intellectual Property and Biotechnology: Biological Inventions*, and *Intellectual Property and Climate Change: Inventing Clean Technologies*. He is an editor of *Patent Law and Biological Inventions*, *Incentives for Global Public Health: Patent Law and Access to Essential Medicines*, *Intellectual Property and Emerging Technologies: The New Biology*, and *Indigenous Intellectual Property: A Handbook of Contemporary Research*. Rimmer has published widely on copyright law and information technology, patent law and biotechnology, access to medicines, plain packaging of tobacco products, clean technologies, and traditional knowledge. His work is archived at *SSRN Abstracts* and *Bepress Selected Works*.