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Introduction (to *Cli-Fi: A Companion*, Oxford: Peter Lang, 2018)

by Axel Goodbody and Adeline Johns-Putra

Since the late 1980s, when it first came to the attention of a wider public, global warming has been generally (although not universally) recognized as one of the greatest challenges facing humanity in the twenty-first century. Models of its future development, predictions of its likely political, social and cultural impact, and proposals for measures to limit the rise in temperature and mitigate its consequences have been hotly debated over the last thirty years, and they are likely to remain subjects of contention for the foreseeable future. This public concern has latterly been accompanied by a growing body of climate change fiction. The emergence of cli-fi (an abbreviation in analogy with ‘sci-fi’ apparently coined by the journalist Dan Bloom in 2007) as a new genre of fiction and film, reflecting but also to a degree informing views and shaping conversations on climate change, was greeted in a series of articles in the press in the USA and Britain in 2013.¹ Climate change fiction has become the subject of numerous blogs and reading forums on the Internet, and a focus of growing academic interest.

Defining cli-fi

Cli-fi is not a genre in the scholarly sense: it lacks the plot formulas and stylistic conventions that characterize genres such as sci-fi and the western. However, borrowing from and often embracing elements of different existing genres, it provides a convenient term for an already significant body of narrative work broadly defined by its thematic focus on climate change,

¹ For example, Rodge Glass, ‘Global warning: The rise of “cli-fi”’, *The Guardian* (31 May 2013); Pilita Clark, ‘Global literary circles warm to climate fiction’, *Financial Times* (31 May 2013).

and the political, social, psychological and ethical issues associated with it. Given the absence of a precise definition, cli-fi may be best thought of as a distinctive body of cultural work which engages with anthropogenic climate change, exploring the phenomenon not just in terms of setting, but with regard to psychological and social issues, combining fictional plots with meteorological facts, speculation on the future, and reflection on the human-nature relationship,² with an open border to the wider archive of related work on whose models it sometimes draws for the depiction of climatic crisis.³

There are, of course, some novels that do not explicitly mention climate change, but have been read as addressing it, such as Cormac McCarthy's *The Road* (2006). And there is a larger number of others – for example, Margaret Atwood's *The Year of the Flood* (2009) and *Maddaddam* (2013), Sarah Hall's *The Carhullan Army* (2007), and works translated from other languages such as Peter Verhelst's *Tonguecat* (2003), Michel Houellebecq's *The Possibility of an Island* (2005) and Rosa Montero's *Weight of the Heart* (2016) – in which global warming is just one of a series of ways in which human actions are irreparably changing the natural environment on a global scale, it does not play an important role in the plot, and its causes, consequences and ethical implications are not discussed. While our working definition leads us to exclude these, it would logically embrace representations of deliberate (but usually disastrous) human interventions into global climatic conditions which predate global warming, such as Jules Verne's novel *The Purchase of the North Pole* (1889) and Alexander Döblin's *Mountains Oceans Giants* (1924). We have chosen not to go down this route in this collection of essays. However, we do include examples of what Jim Clarke has called 'proto-climate-change fiction' in a study of the dystopian novels written by J. G.

² Adam Trexler and Adeline Johns-Putra, 'Climate Change in Literature and Literary Criticism', *WIREs Climate Change* 2/2 (March/April 2011), 185-200; here 196.

³ Adam Trexler, *Anthropocene Fictions: The Novel in a Time of Climate Change* (Charlottesville: University of Virginia Press, 2015), 8.

Ballard in the 1960s,⁴ although these predate awareness of the effects of greenhouse gases, and either attribute climatic change to natural causes (Ballard), use it to reflect on the limitations of human control over the natural environment (Max Frisch), or invest it with other meaning as a metaphor for political developments (Ignácio de Loyola Brandão). The inconsequence of this choice is in our view justified by the themes, tropes and generic features of climate change fiction which are prefigured in these novels.

A brief overview of literary production

The warming effect of increased carbon dioxide and other greenhouse gases in the atmosphere was first identified and progressively understood by scientists such as Joseph Fourier, John Tyndall and Svante Arrhenius in the nineteenth century. However, the ‘discovery’ of climate change only came when renewed attention was paid to this in the 1960s and 1970s. Public concern about human impacts on climate emerged alongside widespread unease over other environmental impacts, over-population, pollution and acid rain – all concerns that led to the organization of the first Earth Day in the US in 1970. Paul and Anne Ehrlich mention the greenhouse effect in *The Population Bomb* (1968), for example. By the early 1980s, the cumulative work over the previous decades – by scientists such as Charles Keeling, Roger Revelle, Wally Broecker, Reid Bryson and Stephen Schneider, presented at forums including the World Climate Conference in Geneva in 1979 – was increasingly penetrating the public consciousness, as evidenced by high-profile news reports and popular science books, such as Howard Wilcox’s *Hothouse Earth* (1975) and Schneider’s *The Genesis Strategy: Climate and Global Survival* (1976).⁵

⁴ Jim Clarke, ‘Reading Climate Change in J.G. Ballard’, *Critical Survey* 25/2 (2013), 7-21.

⁵ For more on the modern history of climate change science, see Mike Hulme, *Why We Disagree about Climate Change* (Cambridge: Cambridge University Press, 2009), 42-60, and Spencer R. Weart, *The Discovery of Global Warming* (Cambridge, MA: Harvard University Press, 2008).

Literary engagement with the phenomenon appears to have started in 1971 with *Lathe of Heaven*, a short sci-fi novel by Ursula Le Guin, author of the young adult fantasy *Earthsea* novels and other works of sci-fi distinguished by their thoughtfulness. It picked up only gradually, with Arthur Herzog's thriller, *Heat* (1977), and the Australian critic and novelist George Turner's *The Sea and Summer* (1987), before experiencing a first flowering around 2000 with Maggie Gee's *The Ice People* (1998), Norman Spinrad's *Greenhouse Summer* (1999) and T.C. Boyle's *A Friend of the Earth* (2000). As these titles suggest, issues associated with climate change were, from the outset, commonly fictionalized within the framework of popular genres, namely sci-fi and, to a lesser extent, the thriller. We shall expand further on the question of generic influences and strategies below, but note here the role played by genre fiction in making early cli-fi marketable, appealing to a specific readership and serving as a resource helping readers think through complex issues. At the same time, it should be recognized that, in some cases, generic expectations of plot and character might distort or distract from the issue of climate change. For, where the appeal of a novel resides mainly in its status within a particular genre (or even within the *oeuvre* of a particularly popular writer of genre fiction), this can circumscribe readers' understanding of potential solutions to the problems it presents. Though sci-fi novelists from Le Guin and Turner to Kim Stanley Robinson and Paolo Bacigalupi have produced relatively sophisticated treatments of climate change, generic norms weigh heavily on thrillers such as Rock Brynner's *The Doomsday Report* (1998) and James Herbert's *Portent* (1992) (which, as a 'chiller', draws on both horror and thriller traditions), starting a trend that continued with Michael Crichton's *State of Fear* (2004) and Clive Cussler's *Arctic Drift* (2008). In contrast, the novels of Gee and Boyle are early examples of writing that draws on generic expectations (mainly from sci-fi) but seeks to avoid the limitations imposed by the popular genre templates. They do so, on the one hand, by complicating stereotypes, introducing ambivalent

characters and ironically subverting expectations, and, on the other, by foregrounding the links between human handling of the natural environment and issues of social justice, gender and sexuality, and individual or collective agency.

Cli-fi took off in the first years of the new century, paralleling Al Gore's success in raising the profile of climate activism, initially with novels from Atwood, Jeanette Winterson and Liz Jensen, in addition to Robinson, Crichton and Cussler. In his survey of Anglophone literature, Adam Trexler writes of over 150 novels,⁶ and there are dozens of films in the category.⁷ Imaginings of the future impact of climate change typically involve desertification, drought and water shortage, floods and violent storms, the spread of tropical diseases, climate refugeeism and the collapse of a society divided between rich and poor into lawlessness and armed conflict. Against this background, human dramas of hope and love, betrayal and despair play out in action-driven plots peopled by journalists and scientists, politicians and climate activists, and ordinary people struggling to live in the worsening circumstances. The changing climate is often one source of anxiety among others, alongside unsustainable levels of consumption and population growth, concerns over the role of science in society, GM foods, genetic engineering and geoengineering, and more generally what is perceived as the slide into ever more individualistic, virtual and 'unnatural' forms of life.

After the 'Climategate' controversy of 2007 (when leaked emails from the University of East Anglia's Climatic Research Unit were interpreted as evidence that global warming was a scientific hoax) and the failure of world leaders to reach agreement at the UN's Copenhagen conference in 2009, concerns about climate change circulated in an atmosphere of distrust, not just of scientific expertise but also of the formal agencies tasked with dealing

⁶ Trexler, *Anthropocene Fictions*, 7.

⁷ E. Ann Kaplan, *Climate Trauma: Foreseeing the Future in Dystopian Film and Fiction* (New Brunswick: Rutgers University Press, 2015). See also Michael Svoboda, 'Cli-Fi on the Screen(s): Patterns in the Representations of Climate Change in Fictional Films', *Wiley Interdisciplinary Reviews: Climate Change* 7/1 (2016), 43–64.

with it – from the IPCC to the UN and to domestic politicians. There was a desensitization, too, resulting from exposure to multiple apocalyptic scenarios. A second cluster of novels which appeared after 2010, including titles by Ian McEwan, Ilija Trojanow and Barbara Kingsolver, reflected and responded to this shift in public opinion, by seeking to understand the reasons for the seemingly irrational unwillingness of the public and politicians to take action in the face of the predictions of climate science, and beginning to explore the realities of living with climate change. Other titles published since 2010 in countries from Finland to Australia include: Antti Tuomainen's *The Healer*, Alexis Wright's *The Swan Book* and Nathaniel Rich's *Odds Against Tomorrow* (all 2013); David Mitchell's *The Bone Clocks*, Simon Ings's *Wolves*, Paul Kingsnorth's *The Wake*, Jeff VanderMeer's *Annihilation*, Emmi Itäranta's *Memory of Water* and Johanna Sinisalo's *The Blood of Angels* (all 2014); Bacigalupi's *The Water Knife*, Clare Vaye Watkins's *Gold Fame Citrus*, James Bradley's *Clade*, Elina Hirvonen's *When Time Runs Out* and the Saga anthology of short climate fiction, *Loosed Upon the World* (ed. John Joseph Adams), all published in 2015. Cli-fi continues to evolve (publications in 2016-2017 include Maja Lunde's *The History of Bees*, Robinson's *New York 2140*, Ashley Shelby's *South Pole Station* and David Williams's *When the English Fall*), with a small number of novelists (Robinson and Bacigalupi, in particular) focusing their production on depicting climate change, and poets and playwrights contributing work such as Frederick Turner's epic poem, *Apocalypse* (2016), and plays in the UK from Caryl Churchill's *The Skriker* (1994) via Steve Waters's *The Contingency Plan* (2009) to the multi-authored *Greenland* and Richard Bean's *The Heretic* in 2011, and Duncan MacMillan and Chris Rapley's *2071* (2014).⁸

⁸ See Stephen Bottoms, 'Climate change "science" on the London stage', *Wires Climate Change* 3/4 (July/August 2012), 339-48.

While most cli-fi originates from North America, Britain and Australia, it is of course a transcultural phenomenon, with films such as the Korean action movie *Snowpiercer* (2013) and a significant production of novels in Germany and Scandinavia.⁹ The small number of non-Anglophone works presented here reflects the paucity of English translations of foreign climate change novels, which ruled out practically all the French contenders (works by Antoine Bello, Julien Blanc-Gras, Jean-Marc Ligny, Jean-Christophe Rufin and Philippe Vasset), and the thirty or so German novels, and influential Latin American writing by Homero Aridjis and Rafael Pinedo. (Scandinavian novelists, who have fared somewhat better in translation, are represented with titles by Jostein Gaarder and Tuomainen.) Not only in the English-speaking world, then, climate change stories have become popular vehicles for reflection on our values and way of life, on patterns of material consumption and the tensions between individual self-fulfilment and responsibilities towards others, giving expression to feelings of anxiety and guilt, and asking what sort of future we want ourselves and others to live in.

Fictionalizing climate change: aims and challenges

Literature plays a part in helping us meet the challenges with which life confronts us, by interpreting the past, dramatizing the situations and choices of the present, and imagining possible futures. Like narratives of gender identity, the stories told about global warming participate in the organization of our social reality as ‘regulatory fictions’,¹⁰ deploying metaphorical concepts to define and constitute classes of objects and identities, and thereby determining how the problem is framed. Stories are forms of collective sense-making with

⁹ See Axel Goodbody, ‘Telling the Story of Climate Change: The German Novel in the Anthropocene’, in Caroline Schaumann and Heather I. Sullivan, eds, *German Ecocriticism in the Anthropocene* (New York: Palgrave Macmillan, 2017), 293-314; and the essay by Reinhard Hennig in this volume.

¹⁰ See Donna Haraway, *Simians, Cyborgs, and Women. The Reinvention of Nature* (New York: Routledge, 1991), 135.

the capacity to motivate and mobilize readers. Building on neurophysiological research into the ability of engagement with storyworlds to trigger real-world emotions and neural responses, and on narratological scholarship on how storyworlds have the ability to initiate simulation of experience and catalyse a mental and emotional ‘transportation’ of readers, Erin James and Alexa Weik von Mossner have argued that literature and film can make new things matter to us, widen our sense of identity to embrace human and non-human others, and foster a sense of care. They do this above all through textual cues which invite readers to inhabit a particular point of view, such as the organization of space and time and the depiction of characters.¹¹ Scholars of moral philosophy have advanced a similar argument, the most prominent work in this area being that of Martha Nussbaum. Nussbaum proposes that literature, in calling on the reader to exercise empathy for characters, helps to widen an individual’s ‘circle of concern’.¹² For Nussbaum, ethical understanding and action require compassion; compassion in turn comprises a cognitive judgement of the scale of another’s suffering, whether it was deserved or not, and, crucially, of whether the other is a significant part of our future goals and activities.¹³ Fiction and poetry encourage us to enlarge this third point, and to include previously unknown others as important to us.¹⁴

Moreover, climate change novels and films might provide what one might think of as a therapeutic space, in which collective Anthropocene anxieties are aired, shared and worked through. E. Ann Kaplan argues that the Anthropocene has induced a global ‘pretraumatic stress’, a macrocosmic version of the PreTraumatic Stress Syndrome (PreTESS) that soldiers experience when assigned to combat. Environmental disaster films, Kaplan suggests, help

¹¹ Erin James, *The Storyworld Accord: Econarratology and Postcolonial Narratives* (Lincoln, NE and London: University of Nebraska Press, 2015); Alexa Weik von Mossner, *Affective Ecologies. Empathy, Emotion and Environmental Narrative* (Columbus, OH: Ohio State University Press, 2017).

¹² Martha C. Nussbaum, *Upheavals of Thought: The Intelligence of Emotions* (Cambridge: Cambridge University Press, 2001), 319.

¹³ Nussbaum, *Upheavals of Thought*, 321.

¹⁴ Martha C. Nussbaum, *Cultivating Humanity: A Classical Defence of Reform in Liberal Education* (Cambridge, MA: Harvard University Press, 1997), 88.

deal with such trauma; they become ‘intriguing, if desperate, attempts by humans to make sense of and find ways around the global catastrophes already in process’.¹⁵

With its potential for encouraging reflection and motivation, cli-fi might be seen as a vehicle for protest against climate inaction. But, for authors, the possibility of galvanizing readers into action must be balanced against the wish not to alienate them. Invited by the Cape Farewell project to write a climate change novel, McEwan ruminated in an interview in 2007 on the pitfalls of polemic: ‘Fiction hates preachiness. [...] Nor do readers like to be hector’d’.¹⁶ In a similar vein, Gee, speaking at the 2014 Hay Festival of Literature, cautioned other environmentally-minded authors against being too ‘message-y’.¹⁷ Such nervousness is not to be taken lightly. The social protest novel has a proud tradition, but environmentalist sentiments are widely associated with stridency, fear-mongering and dogma, risking accusations of what Frederick Buell calls the ‘Chicken Little syndrome’ and ‘doomsterism’.¹⁸ The mixed reception of Gaarder’s *World According to Anna* (2013) and Trojanow’s *Lamentations of Zeno* (2011) in Norway and Germany – both of which were seen to be marred by overt authorial intent to drive home the environmentalist message – reflects this dislike of ‘preachy’ novels.

If cli-fi must avoid what McEwan calls hectoring, it must also be wary of another kind of lecturing. Climate change, more than simply a cultural phenomenon, is, of course, a physical one, knowable through scientific measurement and reporting. Cli-fi is therefore characterized by a mix of factual research and speculative imagination. Although literary fiction is commonly regarded as a form of writing licensed to depart from the purely factual,

¹⁵ E. Ann Kaplan, *Climate Trauma: Foreseeing the Future in Environmental Film and Fiction* (New Brunswick: Rutgers University Press, 2015), 1 and 12.

¹⁶ Boyd Tonkin, ‘Ian McEwan: I Hang onto Hope in a Tide of Fear’ *The Independent*, 20 April 2007.

¹⁷ Diana McCaulay, Michael Mendis and Maggie Gee, ‘The Untold Story: The Environment in Fiction’, Hay Festival, 29 May 2014.

¹⁸ Frederick Buell, *From Apocalypse to Way of Life: Environmental Crisis in the American Century* (London: Routledge, 2003), xvii, 244-6.

one distinguished by ‘depragmatisation’,¹⁹ climate novels often go to considerable lengths to integrate scientific information. In *Flight Behaviour*, for instance, Kingsolver draws on her specialist knowledge as a trained biologist to rehearse the different ways in which global warming might affect the migration routes of the monarch butterfly, and *The Rapture* relies on the short explanations offered by a small cast of scientists to convey the research insights Jensen gained from her interactions with geologists at the University of Bristol. That this handling of scientific content demands particular skill, if the action is not to be interrupted and the reader’s attention lost, is shown by the impatience with ‘info-dumping’ expressed in many online comments on cli-fi.

Approaches and forms

Particular difficulties in representing climate change in literary or filmic narrative result from the complexity of its causes and manifestations, and the discrepancy between its enormous spatial and temporal scale and that of individual human experience. Anthropogenic climate change is a global ecological problem which impacts quite differently in different parts of the world, and is set to affect distant generations incomparably more than the present. The issue of scale has received much critical attention in recent years.²⁰ Several – more or less sophisticated – cli-fi responses to this problem might be sketched. Some texts telescope the time frame, sometimes with a liberal dose of apocalyptic spectacle (for example, in *The Day After Tomorrow* [2004], which presents a similar ‘abrupt climate change’ scenario as Robinson’s trilogy). Others opt for a non-linear depiction of time that might be thought of as postmodern (for example, Winterson’s *The Stone Gods*, Mitchell’s *The Bone Clocks*, and

¹⁹ Hubert Zapf, *Literature as Cultural Ecology: Sustainable Texts* (London: Bloomsbury, 2016), 87.

²⁰ Two prominent examples are Timothy Morton’s concept of hyperobjects in *Hyperobjects: Philosophy and Ecology after the End of the World* (Minneapolis: University of Minnesota Press, 2013) and Timothy Clark’s analysis of Anthropocene disorder and scale effects in *Ecocriticism on the Edge: The Anthropocene as a Threshold Concept* (London: Bloomsbury, 2015), 139-55.

Wright's *The Swan Book*) or otherwise generically innovative (as in the 'futurist history' conceit and docufictional structure adopted in *The Age of Stupid* [2009], where short documentary films are placed within the fictitious frame of a narrator sharing archives from a posthuman future). Still others, grappling with the ecologically and spatially diffuse nature of climate change, focus on a single event or setting that stands in, by analogy, for the multiple and multi-scalar effects of global warming (the monarch butterflies of Kingsolver's novel, for instance). Then, there are novels that deploy a montage of different settings and an ensemble of characters (as in Robinson's *Science in the Capital* trilogy and Gee's *The Flood*). This recalls Ursula Heise's argument that climate change might best be depicted through the fragmented narrative techniques of high modernist fiction: Heise cites David Brin's *Earth* (1990) as a narrative montage embracing a large number of characters and episodes, and inserting fragments of 'authentic' discourse (quotations from news announcements, letters, legal texts, books and online newsgroup discussions) into the fictional story.²¹ Frisch's *Man in the Holocene* (1980) anticipated this technique by integrating a collage of factual information and reflections on the position of humanity in the context of geological time, as an alternative way of organizing and recording knowledge, in the narrative of the protagonist's mental decline (which serves as a correlative of the long-term fate of humanity). Novelists have thus resorted to a range of techniques to render the vast spatial and temporal scale of global warming meaningful for readers.

Associated with questions of scale are the intractability and open-endedness of the 'wicked problem' of climate change.²² Too often, the progress of narrative emphasizes dénouement; indeed, Frank Kermode's influential analysis suggests that narrative is defined

²¹ Ursula K. Heise, *Sense of Place and Sense of Planet: The Environmental Imagination of the Global* (Oxford: Oxford University Press, 2008), 205-10. See also Heise's essay in this volume.

²² On climate change as a 'wicked' problem, see Hulme, *Why We Disagree about Climate Change*, 334.

by the drive towards closure.²³ The result can, however, be that the depiction of the human drama takes precedence over that of ecological process, that the latter becomes a mere symbolic representation of a turning point in the protagonist's life, and the intractability of climate change is subordinated to the requirement for resolution of the conflict in order to satisfy the reader. For example, disaster narratives almost inevitably involve master plots of guilt and punishment, the quest for redemption, or romance, implying a degree of resolution which sits ill with the open-endedness of climate change.

Overall, it could be said that cli-fi walks an uneasy line between, on the one hand, presenting the dimensions, processes and impacts of global warming in a way that awakens the reader's curiosity and appeals to her psychologically, intellectually and emotionally – as art generally strives to do – and, on the other, conveying the enormity, urgency and indeterminacy of climate change. Timothy Clark has gone so far as to propose that the conventions of story-telling are inadequate to address climate change in all its complexity.²⁴ More positively, however, this tension might be framed as an opportunity for the novel to do what it has always done – innovate. Trexler's analysis in *Anthropocene Fictions* is based on the premise that climate change, as a phenomenon comprised of multiple and interlinked kinds of agency, has changed the very form of the novel. Ian Baucom proposes that, since the Anthropocene calls for an understanding of human history at the level of species rather than individual or even political relations, it concomitantly requires a different kind of historical novel.²⁵

The sheer prevalence of cli-fi might suggest that literary and cinematic artists are continuing to grapple, in ever greater numbers, with the demands of climate change.

²³ Frank Kermode, *The Sense of an Ending: Studies in the Theory of Fiction* (Oxford: Oxford University Press, 1966).

²⁴ Clark, *Ecocriticism on the Edge*, 187.

²⁵ Ian Baucom, "'Moving Centers": Climate Change, Critical Method, and the Historical Novel', *Modern Language Quarterly* 76/2 (2015): 137-57.

Certainly, the growing corpus of texts provides plenty of evidence of authors' response to climate change as a matter of both *adopting* and strategically *adapting* existing generic conventions and approaches, in order to achieve what we have already outlined – alerting readers to the dangers of global warming, informing debates, motivating and empowering to think and act, and thereby facilitating attitudinal and behavioural change, without falling into various pitfalls. A particularly influential mode of writing has been apocalypse, which plays on fears and conveys a sense of the extreme urgency of radical action, but also prominent is its double, pastoral, which conjures up images of harmonious living and cultivates a nostalgic feeling of loss and potential restoration.²⁶ The plot pattern of transgression and redemption (to which we have already alluded), when set within a world where environmental plenitude gives way to disaster, echoes the biblical narratives of the Flood, the Tower of Babel, and the Apocalypse. Other genre models include the detective story (which evaluates clues and exposes criminals), and, similarly to this, the thriller (which is driven by suspense and the progressive revelation of secrets as the narrative reaches a climactic end). There is also the *Bildungsroman*, in which the protagonist learns about the dangers of climate change as part of a wider process of self-discovery. Sub-genres including post-apocalyptic cli-fi (at times taking on Gothic features, at others adopting the form of the 'last man', castaway or desert island story), ecotopian narrative, techno-thriller and biopunk have emerged (this last exploring the dark side of biotechnology, while tracing the struggle of individuals for survival and self-realization in dystopian future worlds). Futurist history is a commonly encountered structural device borrowed from sci-fi. Found in purest form in Naomi Oreskes and Eric Conway's *The Collapse of Western Civilization* (2014), where a Chinese historian looks back from the year 2373 at how climate change brought civilization to an end in a great

²⁶ For a discussion of the relationship between apocalypse and pastoral, see Greg Garrard, *Ecocriticism* (Abingdon: Routledge, 2012), 99 and Heise, *Sense of Place and Sense of Planet*, 141-2.

social collapse which decimated the population and forced the survivors to return to a simpler way of life, this framing of climate change is also present in Turner's *The Sea and Summer*, Boyle's *Friend of the Earth*, and, as we have already suggested, the film *The Age of Stupid*.

In such futurist histories, the potential for satire – certainly, self-satire – is evident in the element of self-critique and self-awareness that must inevitably result from the reader's encounter with those in the future who regret and resent humans' past mistakes. More generally, satire plays a role in novels and films which reveal the failings of contemporary society through juxtaposition with alternative realities or exposure of hypocrisies to ridicule. Will Self's *Book of Dave* (2006) and Ian McEwan's *Solar* (2010) are examples of cli-fi in which mockery or black humour plays a major role, serving to avoid heavy-handed stimulation of fear, hate and guilt.

As has already been suggested, the settings and scenarios of some cli-fi might be seen as analogies of the larger-scale patterns and effects of global warming. Going beyond simple analogy, some cli-fi texts explicitly present their stories as allegory. In McEwan's *Solar*, for instance, the protagonist serves as a modern everyman as well as a particular type of scientist and entrepreneur, and a transparently allegorical scene set in a boot room on a trip to the Arctic demonstrates the inability of individuals, however well-meaning, to support each other and organize themselves harmoniously for the common goal of contributing to public awareness of the ecological crisis. Use of symbols is an associated literary technique. In the post-apocalyptic future storyworld of Emmi Itäranta's *Memory of Water*, water has become a precious commodity which the military control access to and use to terrorize the population. The association of water with life, sharing with others, ecological connectedness and the memory of a truth which the authorities seek to suppress enables the issue of climate change to be overlaid with exploration of personal development and gender issues, and beyond these

with reflection on the meaning of life and the ability of art to provide a permanence which human life does not afford.

In other novels, departures from the human focalization and linear narrative structure traditionally associated with literary realism serve to undermine Cartesian exceptionalism, and reveal the presence and agency of the non-human. Nature itself can become the narrator, as in Dale Pendell's novel, *The Great Bay* (2010), and anthropomorphism can be a powerful tool 'for questioning the complacency of dominant human self-conceptions'.²⁷ In *The Swan Book*, Wright draws on Indigenous Australian beliefs to blur the boundaries between human and non-human agency, aligning the ecological mistreatment of the black swans of her novel's title with the injustices visited on her people. The novel is an explicit critique of what Australian ecocritic Val Plumwood has called the 'androcentric, eurocentric, and ethnocentric, as well as anthropocentric' tendencies of dominant Western cultures.²⁸

Teaching cli-fi

The plethora of websites marketing, recommending and reviewing climate change fiction is only one form of evidence of the considerable popular interest in the subject. In response to this interest, courses on cli-fi are now being offered at various universities. Perhaps the most obvious question calling for critical consideration is what part fiction and film can play in environmental education. Readings of cli-fi texts frequently focus on the potential of narratives and narrative conventions to raise awareness of climate change and initiate a shift of attitude, thereby addressing what Clark has called 'Anthropocene disorder'.²⁹ Students might examine the use of role models and identification figures in young adult fiction, and investigate points of view and other literary techniques through which readers' and viewers'

²⁷ Timothy Clark, *The Cambridge Introduction to Literature and the Environment* (Cambridge: Cambridge University Press, 2011), 192.

²⁸ Val Plumwood, *Environmental Culture: The Ecological Crisis of Reason* (London: Routledge, 2002), 101.

²⁹ See Clark, *Ecocriticism on the Edge*, Ch. 7

identification is cued and empathetic and ethical responses are invited.³⁰ They might study how literature's eye for detail and sensuous evocation of sights, sounds, smells, taste and feel make storyworlds real and authentic, thereby developing attentiveness to nature (in texts from *Frozen* [2013] to *The Lamentations of Zeno*), and countering the anaesthetizing of the senses that has blocked consciousness of the impact of global warming and our own implication in its causes in everyday life.

Examination of texts might focus on the extent and reliability of the factual information on climate change which they convey, how skilfully it is integrated in the narrative, and how effectively it is related to readers' lived experience. Or it could focus on tensions between this dissemination of knowledge and interrogation of our ethical responsibility to future generations on the one hand, and aesthetics on the other. How, and how successfully, is crude didacticism avoided? (It is striking how many narratives adopt an indirect approach to climate change, featuring cooling rather than warming.) To what extent does the author seek to feed into public debates, either by providing information, presenting a particular perception of climate change and its possible resolution, or perhaps rather by promoting critical thinking?

A second possible approach is to explore the ability of 'speculative fiction' (Atwood's alternative term to 'science fiction') to extrapolate from current trends and imagine the future,³¹ by comparing different texts as thought experiments, working through the consequences of different choices in differing circumstances, and juxtaposing them with non-fiction scenarios such as those of the IPCC.³² It may be instructive to establish and critically

³⁰ See James, *The Storyworld Accord*; Weik von Mossner, *Affective Ecologies*; and Nussbaum, *Upheavals of Thought*.

³¹ Margaret Atwood, 'The Handmaid's Tale and *Oryx and Crake* in Context', *PMLA* 119/3 (2004), 513-17.

³² Alexandra Nikoleris, Johannes Stripple and Paul Tenngart ask how five cli-fi novels relate to and complement the IPCC's latest scientific scenarios of alternative societal developments in 'Narrating Climate Futures: Shared Socioeconomic pathways and Literary Fiction', *Climatic Change* 143 (2017), 307-19.

assess what they identify as the root causes of climate change, and how they relate environmental degradation to social inequality or gender relations.

A third group of questions relates directly to aesthetics, and through this, returns us to questions of ethics. What role do genres such as thriller, disaster novel and sci-fi play in shaping the account of climate change, what limitations might these impose, and to what extent have given writers succeeded in circumventing these? How do narrative and temporal structure (and other mechanisms for relating the present with the future such as memories and dreams) bridge the gap between the spatial and temporal scale of global warming and that of the human subject? What work is done by framing through prologues and epilogues, ambivalent protagonists (as in *The Lamentations of Zeno*) and unreliable narrators (as in *Take Shelter* [2011]) to complicate and critique common environmentalist tropes? What use is made of non-mimetic narrative forms such as fantasy and myth, and of religious and literary allusions? The wider symbolic significance of such diverse motifs as troubled parent/child relations, cannibalism, ice, floods and cyborgs similarly invites exploration through comparisons. A focus on reader/viewer identification and ethical response would also facilitate subaltern approaches informed by Marxist, postcolonial, feminist or queer theory, in order to interrogate what is included and what is left out in empathetic and ethical invitations, and affective cues.

The shape and aims of this volume

This collection of essays was conceived as a contribution to the new Peter Lang (Oxford) series of readers/companions on genre fiction and film. Twenty-four novels and five films were selected (with some difficulty, given the number of titles to consider and their diversity), as representative of work in the genre. The volume opens with three contributions on proto-climate-change fiction: these show that real and perceived changes in the climate

were a matter of concern before knowledge of anthropogenic global warming, and that climate change has always been interpreted in the light of human actions, and invested with wider meanings relating to socio-political concerns. The remaining essays have been divided into five sections, on speculative future fiction (dystopian and apocalyptic narratives), realist narratives set in the present or near future, genre fiction (thriller, crime, conspiracy, social satire), children's film and young adult novels, and literary modernism. The essays, which were all written for this volume, were commissioned from an international team of scholars already known for their work in the field. The contributors were asked to offer ways of reading/understanding the text (in most cases a single novel, but in a few, focusing on one novel by the author in the wider context of their work), and to keep plot summaries as brief as possible, so as to leave space for an analysis capable of engaging general readers as well as students and teachers. They were invited to indicate the importance of the work and its reception, and to provide suggestions for teaching. The academic apparatus of references has been deliberately curtailed, but the volume closes with recommendations for further reading and an index. We hope that this publication will fill what we see as a gap between longer, theoretically-driven academic studies and the brief descriptive accounts and subjective views expressed in most internet blogs.