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Climate Fiction in English

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Summary and Keywords

In the 21st century, a new genre of Anglophone fiction has emerged—the climate change novel, often abbreviated as “cli-fi.” Many successful authors of literary fiction, such as Margaret Atwood, Paolo Bacigalupi, T. C. Boyle, Michael Crichton, Ian McEwan, Amitav Ghosh, Barbara Kingsolver, Ursula Le Guin, Lydia Millet, David Mitchell, Ruth Ozeki, Nathaniel Rich, Kim Stanley Robinson, Leslie Marmon Silko, and Marcel Theroux, have contributed to this new genre’s efforts to imagine the causes, effects, and feeling of global warming. Together, their work pulls the issue-oriented and didactic approach of activist fiction into contact with the intensive description and site specificity of Romantic nature writing. Cli-fi knits these tendencies together into a description of the effects of a dramatic change in the Earth’s climate on a particular location and a vision of the options available to a population seeking to adapt to or mitigate those effects.

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Although cli-fi is resolutely contemporary and dedicated to creating new narratives adequate to current conditions, criticism devoted to the genre has carefully documented the persistence of national, masculinist, and anthropocentric tendencies in some of its major works. The dependence of cli-fi (and the environmental activism that inspires it) on capitalist visions of social progress has also received scrutiny. Some of these habits of representation have been inherited from literary predecessors such as Henry David Thoreau, Rachel Carson, Ernest Callenbach, and J. G. Ballard. Ballard's *Drowned World* has proved an especially complicated source of inspiration for this new genre of the novel. In their efforts to update the motifs of these predecessors to the needs of the present, 21st-century cli-fi writers have experimented with the temporality, central figures, and mood of their fiction. These efforts have brought distinctive types of speculative and science fiction, as well as satires of climate change activism and new hybrid realisms, under the cli-fi umbrella. Although the genre still wrestles with inherited limitations, in every permutation, cli-fi novelists have prized innovation, experimentation, and creativity. Finally, all of their varied efforts involving cli-fi unite around an expectation that humanity and the planet can survive the changes associated with the Anthropocene.

Keywords: climate change, genre, environmental writing, contemporary Anglophone fiction

The Emergence of Climate Fiction

One of the most successful new genres of Anglophone fiction is the climate change novel, often abbreviated as “cli-fi.” The exact origins of the term “cli-fi” are obscure, but the journalist Dan Bloom has certainly played a crucial role in its history, as is documented by his invaluable website, *The Cli-Fi Report*. Reviewers began referring to cli-fi regularly in the 2000s, and in his definitive study, *Anthropocene Fictions: The Novel in a Time of Climate Change*,¹ Adam Trexler documents the prominence that “cli-fi” had achieved in newspaper accounts by 2013.

Characterized most frequently by efforts to imagine the impact of drastic climatological change on human life and perceptions, cli-fi narratives can be set in the past, present, or near future of the planet. The styles and voices used in cli-fi range widely, but these works often pay marked attention to the perspectives of scientists, especially where these deviate from popular ideas about the environment. Setting is of crucial importance for cli-fi; endangered cities, islands, and remote Arctic regions are common locations. Events of the genre often turn on a dramatic transformation in the setting, such as floods or the collapse of the food system. The pacing of these narratives tends to be accelerated and punctuated by crisis. This temporality creates an anxious, fearful mood and a preoccupation with the instability of objects and the permeable boundaries between human and nonhuman lives. Together, these motifs cohere in an apocalyptic sensibility,

and differences of opinion about the necessity of apocalyptic patterns of guilt, crisis, and salvation have been an important source of controversy surrounding the genre.

Ecocriticism and Cli-fi

Critical discussions about cli-fi express many of the concerns that have animated the broader field of literary and social criticism known as “ecocriticism.” This field examines the significance of nature in literary culture from ancient to contemporary times and in many linguistic traditions and genres. Historicist ecocritics, such as John Gatta and Lawrence Buell, have deepened readings of the figures of nature in Romantic poetry and the 19th-century novel, for instance, teaching readers to recognize the ongoing role of the sacred in purportedly secular depictions of nature and urging reconsiderations of pastoralism. Groundbreaking works, such as Carolyn Merchant’s *Ecological Revolutions: Nature, Gender, and Science in New England*,² brought the gendered aspects of this process clearly into view. In the 21st century, a second wave of ecocritics has begun to focus more on contemporary crisis and to call for for a sweeping transformation of the project of literary and cultural criticism on environmental themes. Some of this work examines built environments, such as the city, seen in ecological terms, in addition to emphasizing the intersection of race, ethnicity, and the postcolonial condition with ecocritical concerns. Outstanding examples of work of all of these types can be found in Greg Garrard’s *Oxford Handbook of Ecocriticism*.³ The revisionist turns made by the second wave of ecocritics has gone straight to the roots of the movement’s enterprise. Dipesh Chakrabarty, for example, asserts that from the vantage point of ecocriticism we must rethink the foundations of political and social history.⁴ Progress, Enlightenment rationality, the struggle for human freedom—all of these important themes pale in significance in the context of a looming environmental crisis of planetary proportions, he argues. Chakrabarty is particularly interested in the examining the challenge ecocriticism poses to postcolonial studies and the project of liberation that has been crucial to that field.

A third wave of ecocritics may also be emerging, influenced by object-oriented ontology. Critics such as Timothy Morton turn away from the more sociological ambitions of the second wave and attempt to imagine the earth without reference to its human subjects. This has consequences for both the scale and the temporality of environmental narratives. In a related vein, Donna Haraway describes the condition preceding and—one hopes—following the period of climate crisis as the “Chthulucene.”⁵ Developing this term not from H. P. Lovecraft but rather from the concept of the chthonic or indigenous, Haraway understands the Chthulucene as entangling “myriad temporalities and spatialities and myriad intra-active entities-in assemblages—including the more-than-human, other-than-human, inhuman, and human-as-humus.” She argues that humans and nonhumans alike rely on the earth as a place of refuge. Recent debates within ecocriticism about the relation of an arguably global nature to national or regional

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culture also influence accounts of cli-fi as a genre. E. Ann Kaplan argues that the cli-fi narrative, whether literary or filmic, is embedded in a trauma-laden sensibility that is recognizably American, and Heather Houser explores the ways that the affectively moving figure of the ill protagonist embeds eco-consciousness in culturally specific accounts of bodily vulnerability.⁶ These figures, Houser argues, condense several interlocking features of contemporary American life (from biomedical technologies to digital networks), joining these to a holistic perception of the environment. Raymond Malewitz makes a similar argument about the emergence of cli-fi out of American literary regional aesthetics, and Heidi Hansson demonstrates the impact of a Canadian Arctic sensibility on the genre.⁷ While Kaplan, Houser, Malewitz, and Hansson argue for a productive emergence of cli-fi motifs out of North American national conventions, Adam Trexler and Kate Marshall both shift the terms, insisting that climate fiction is not a development within a particular tradition but rather a direct, multigenre response to the narrative challenges involved in representing the global changes to the environment wrought by human activity—a response, in other words, to the geological age increasingly known as the Anthropocene. Climate fiction, by their account, largely renders national and generic traditions irrelevant, opening up to a planetary scale.

Discussions surrounding cli-fi have also provoked an inquiry into the genre's depiction of the future. Critics have asked whether the genre inevitably envision apocalyptic destruction of the human species, carbon-based life, or the planet as a whole. Or does it mainly anticipate—whether eagerly or anxiously—the demise of economic, political, and social arrangements that have triggered climate change? What kind of posthuman or postcapitalist world can the genre imaginatively call into being? Is the crisis envisioned by cli-fi one of the Anthropocene or, in Jason Moore's important turn of the concept, the Capitalocene—the geological age that records the impact of global capitalism?⁸ Building on a longstanding conversation in science fiction studies, the Capitalocene question for cli-fi is why and whether it is easier to imagine the end of the world through climate-induced flooding than it is to ponder life after capitalism, to paraphrase Fredric Jameson.⁹ This frequently reiterated question invites critics to scour the genre for moments when it potentially looks beyond crisis. The movement of ecocriticism, in other words, urges readers to recognize the subliminal commitment of cli-fi to utopian invention as well as its most readily perceptible commitment to apocalyptic terror. These two gestures take on different weights in various incarnations of climate change fiction, but both are recurring and essential features in the genre.

Predecessors to Cli-Fi

The roots of 21st-century cli-fi are varied, but no account would be complete without mentioning the genre's entanglement with major prose works in the pastoral tradition, especially Henry David Thoreau's *Walden* and Rachel Carson's *Silent Spring*. Famously intermingling social satire, spiritual allegory, and close observation of his site, Thoreau's

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Walden inhabits a genre of its own. Nonetheless, despite Thoreau's explicit warning to his readers not to imitate his project of living largely alone in the woods, his book has inspired many later writers. In Edward Abbey's *Desert Solitaire*, Annie Dillard's *Pilgrim at Tinker Creek*, Terry Tempest Williams's *Refuge*, and other works, a genre of non-fictional nature writing has arisen that is dedicated to the solitary Thoreauvian observer's meditations on natural phenomena at a remote site.¹⁰ Cli-fi shares with this nonfictional writing a fascination with subjective human responses; its perplexed, injured, or psychically damaged heroes often participate in this eremitic tradition. The hero of Nathaniel Rich's *Odds against Tomorrow*, for example, takes up a satirically exaggerated but clearly Thoreauvian project of house building in the final third of the novel, when he fortifies a compound in one of Manhattan's outer boroughs after a devastating flood.¹¹ Striking out to discover a new way "to live deliberately," in Thoreau's often-quoted phrase, is also an important motif in Marcel Theroux's *Far North*, a novel of heroic scavenging set in the post-apocalyptic Arctic.¹² In a somewhat less satiric vein, T. C. Boyle's historical novel *San Miguel* explores the inward-looking communion with the Santa Barbara Channel Islands undertaken by some of their early inhabitants.¹³ This focus on the site and moods of the scientist's hermitage owes a great deal to Thoreau.

At the same time, other features of the post-apocalyptic scene so prevalent in cli-fi can be traced back to *Silent Spring*. A poetically rendered analysis of the impact of commercially manufactured pesticides on migratory birds, Carson's book imagines the devastated and lifeless (hence silent) spring resulting if steps are not taken to prevent species die-off. This extrapolation to a possible future whose origins we may have already seen anchors the complex temporality of the apocalyptic novel, as does *Silent Spring's* cautionary and didactic attitude. Carson's vision culminates in a stark assertion: "No witchcraft, no enemy action had silenced the rebirth of new life in this stricken world. The people had done it themselves." Dialing back to an anthropogenic cause before swooping forward and outward to a vision of a devastated land are the twin movements of the apocalyptic sensibility. Many writers—from Margaret Atwood in her *Oryx and Crake* trilogy to Paolo Bacigalupi in *The Wind-Up Girl*—are interested in this sense of human culpability and the posthuman remainder that might survive in a "stricken," finite, and possibly irrevocably damaged world. Atwood describes a horrific plague released upon a corporate-dominated system of food and reproduction by a zealous avenger, while Bacigalupi sets his novel in a near-future Thailand that houses one of the only remaining seed banks capable of introducing non-mutated foods back into the commodity chain.

While the influence of Thoreau and Carson grounds cli-fi firmly in a narrative of post-apocalyptic survival, the genre also shows the influence of writing in the utopian tradition. Here, Ernest Callenbach's *Ecotopia* is a touchstone.¹⁴ Callenbach's programmatic novel imagines a sustainable group of interlinked urban centers in the Pacific Northwest, describing in detail the systems of job sharing, communal housing, holistic healthcare, and organic composting that characterize this postcapitalist society. A similar set of concerns and locations clearly informs much of Kim Stanley Robinson's environmentally themed science fiction, most notably his "Three Californias" trilogy. But the same sensibility is also displaced to the elaborately conceived and purpose-built

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ecosystems in Robinson's award-winning hard-science utopias, *Red Mars*, *Green Mars*, and *Blue Mars*.¹⁵ Programmatic utopianism focused on the envisioning of specific technologies and processes that make possible a new form of sustainable living is perhaps not the most dominant strain in cli-fi, given the genre's preoccupation with simple survival, but a utopian impulse toward rebuilding and post-crisis endurance is a vital component of the genre.

The apocalyptic scene and the utopian drive of cli-fi progenitors memorably cohere in the novel that has been claimed retrospectively as the source for this genre's post-diluvian imaginary: J. G. Ballard's *The Drowned World*. Although a minor classic since its publication in 1962, *The Drowned World* has been reclaimed and reissued in the 21st-century context. Resolutely fictional rather than autobiographical or documentary like Thoreau and Carson's writing, Ballard's short novel describes the hallucinogenic journey of Robert Kerans, a UN scientist charged with mapping the drowned cities of western Europe in a period of non-anthropogenic tropical climate change. While holed up in a deluxe apartment building floating like an island above a flooded London, Kerans encounters a sexy *Vogue*-reading straggler, a crew of barbaric Afro-Caribbean scavengers headed by a crazed white leader, and the remnants of other phases of his own techno-military expedition. After a series of undersea explorations that double as journeys through the unconscious and into the instinctual limbic system, Kerans ventures off alone, braving a perilous jungle stocked with giant iguanas, bats, and crocodiles—his destination the deadly Equator. The novel is easily read in light of Ballard's own upbringing in colonial Shanghai, a reading justified by the hero's name (which alludes to a British anticommunist naval hero active in the region, John Kerans). Focusing on the British Empire means interpreting the flooding allegorically and the national/racial conflicts literally. However, in the context of cli-fi, Ballard's flood is treated literally, and it is the movement of the apparently remote Conradian periphery into Europe's urban centers that calls out for a more allegorical interpretation.

In addition to this reversal of figures, Ballard's novel has proved an important rediscovered progenitor for cli-fi because of his novel's complicated resistance to politics. Kerans's narrative ultimately retreats inwards, focusing on consciousness and figures for social and personal regression. *The Drowned World* presses hard on the scientist's commitment to rationality and adventurous machismo, situating these within a narrative that insists on the failures of liberal progress narratives and the limitations of rationalist efforts to know and organize the world for humanity's benefit. The oddly persistent figure of cannibalism also marks for Ballard the limit point of the human, because cannibalism encodes not only the horrific sacrifices associated with survival plots but also the endangerment of the very possibility of coexistence in a human community. At *The Drowned World*'s climax, Kerans discovers his wan, costumed love interest has been held captive at the center of a tableau of bones and "savage" dancing orchestrated by his Kurtz-like nemesis. This scene suggests that the social and psychological regressions toward the primitive that have been triggered by the high temperatures in the flooded world have eroded the foundations of reason and any morality premised on human species-feeling. This figure of the cannibal as the outer limit of the endurable arguably

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perpetuates the anxieties evident in narratives of European contact with the indigenous peoples of the New World, a tainted history that makes its persistence in Ballard's writing and elsewhere notable. This legacy suggests that, where it culminates in cannibalism, the apocalyptic sensibility of climate-change fiction may be recognizing its own anxious ongoing attachment to a much-sullied model of Western civilizational so-called superiority.

At least, this is a conclusion suggested by Ballard's cannibals. Given the widespread acceptance among cli-fi authors of anthropogenic accounts of climate change and Ballard's explicit use of the solar-flare theory of global warming, it is surely not the scientific theory of this novel that makes it so important for cli-fi authors. Instead, Ballard's influence likely derives from his envisioning of the scene of the drowned city and his investment in affectively intense portraits of crises of confidence among the would-be scientific analysts of a world spinning out of control. These have become essential touchstones of climate change fiction as a genre in all of its various manifestations.

Cli-fi and Sci-fi

If science fiction proper has often been concerned with either extrapolating technological development from existing social conditions or providing alternate histories that reimagine the supposed inevitability of the present, then cli-fi has deviated from those norms. The near-future, post-apocalyptic scenarios so prevalent in the genre often assume that the turning point for change occurred before our own historical moment, and consequently they frequently rely on archaic images, such as the drowned city. Readers encounter literally flooded cities in Le Guin's *Oregon*, Ballard's *London*, Bacigalupi's dammed-up Bangkok, and Rich's hurricane-damaged Manhattan. A preoccupation with islands extends the metaphor, as evidenced in Boyle's *Santa Barbara Channel Islands*, Amitav Ghosh's *Sundarbans*, David Mitchell's *Hawaii*, Ian MacEwan's *Spitsbergen*, and even Michael Crichton's *Vanuatu*. In *The Year of the Flood*, the second volume of her *Oryx and Crake* trilogy, Margaret Atwood extends the urban flooding motif even farther, explicitly recalling its biblical origins and the Noah's Ark narrative and using these as metaphors for planetary crisis.

The use of these flood motifs in cli-fi also affects the temporality of the genre, shifting it away from the future orientation or alternate presents of science fiction. Cli-fi is consistently concerned with a temporality that is retrospective, looking back to a change that has already begun to occur and to which humans and other species must adapt. Cli-fi rarely, if ever, allows its protagonists a chance to mitigate those effects, let alone alter the conditions for their occurrence (as in time travel narratives). John Connor cannot go back in time to battle the climatological Terminator. The terminus may not be prevented through manipulations of temporality in this genre.

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Instead, as Srinivas Aravamudan explains, the temporality of cli-fi is catachronistic.¹⁶ That is, by inverting anachronism or the projection of the present into the past, cli-fi synthesizes past and present and projects the result into a largely unavoidable but still emergent or creeping future. To this way of thinking, the turning point, such as it is, in climate fiction is an event that went unnoticed in the recent past but whose effects permeate the present and future. This sensibility raises the specter of a world in which only weak forms of human progress and control are possible, and consequently a renewed emphasis on the plasticity of the human body and its vulnerability to environmental change arises.

This catachronistic temporality is expressed in the recurring figure of the Last Book. This is a common cli-fi motif, appearing in stories such as Helen Simpson's "Diary of an Interesting Year," published in the *New Yorker* in 2009 and anthologized in *I'm with the Bears*.¹⁷ Set in a post-apocalyptic 2040, this story concludes with the unnamed author of the titular diary describing how she will wrap her writing "in six plastic bags, sealing each one with duct tape against the rain" before burying it—a gesture made with little hope that anyone will be "mad enough" to read it. Margaret Atwood's *MaddAddam* concludes similarly with the "Book of Toby," a quasi-biblical record of the expiring Toby's exploits and maxims being offered by her young protégé—the first or, more likely, last literate humanoid in Atwood's post-flood North America. This motif can be traced back to Ballard; John Kerans scrawls an "All is well" message to comfort any unlikely followers at the tomb of the dying soldier he carefully nursed in his final hours.

These and other abandoned documents associate the author's own literary work with the embedded figure of a written record of a lost civilization, looping the reader's own experience of the text into the story. When it is most effective, this gimmick intensifies a sense of gothic foreboding about the present, because it catachronistically unites contemporary practice with a future on the brink of extinction. If the text one is reading is the last book produced by the future civilization our own passivity has consigned to doom, then one's own solitary reading becomes a portal through which travels our empathetic horror with those who do not yet exist. This identification with a future loss differs significantly from the ponderous revelations of, say, the discovery of the half-buried Statue of Liberty in *Planet of the Apes*. The substance of the revelation in cli-fi is not that our own (liberal, progressive) civilization is doomed by a transition we have yet to experience but ought to anticipate; it is, rather, that we may already inhabit a post-apocalyptic future without even realizing it. We are no longer who we thought we were, if we thought we were modern, human, and progressive.

Consequently, as Aravamudan suggests, cli-fi reveals a complex preoccupation with posthuman modifications to the body. Here again, the genre draws on sci-fi fascination with cyborgs, robotics, and technological extensions of the biological body. There is also some, though not much, interest in cli-fi in digital systems of ultra-rapid "cyberpunk" communication. These mainly manifest in the figure of the human with alterations to the

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genetic code, a figure imagined—at least by Atwood and Bacigalupi—as a potential survivor of the social collapse triggered by climate change.

In *The Wind-up Girl*, Bacigalupi investigates the technologically enhanced body most explicitly. The titular girl appears mechanically “wound up” and moves with a mechanical, stuttering gait except in situations when her survival is in question. Then, a hidden capacity for instinctive super-speed is revealed. Both of these adaptations were designed by a genetic engineer. At the novel’s climax, the wind-up girl confronts her Pygmalion, and he not only appreciates his handiwork but also offers to upgrade her design so that she might, against precedent, become capable of biological reproduction as well. The manipulated genetic code thus signals in Bacigalupi’s novel a determinant relation to the needs of the dominant powers, making the self an effect and the future a phase in which, at best, those designed mutations might proliferate unexpectedly. The malleable, plastic aspects of DNA make it susceptible to both conscious design and open futurity. It is not the incorporation of the human into a machine-controlled collectivity (like *Star Trek’s* Borg) that the posthuman wind-up girl’s enhancements signify. It is instead the malleability of the human biological organism itself, its susceptibility to failed or incomplete human projects to adapt to environmental change.

This cli-fi version of a posthuman plasticity generates some tension with the residue of heroic hypermasculinity that, Jeanne Hamming has persuasively argued, characterizes the imaginary of American science-fictional techno-thrillers in particular.¹⁸ Hamming describes both Michael Crichton’s *State of Fear* and Kim Stanley Robinson’s *Science in the Capital* trilogy as reactions to a perceived loss of social authority experienced by heroic masculine science. Despite their diametrically opposed assessments of climate change (Crichton considers it a hoax perpetrated by academic elites, and Robinson sees it as an effect of capitalist exploitation), the two authors share, in Hamming’s analysis, a common figure in the compensatory masculinity of the heroic scientist. This reactive shoring up of masculinity is especially apparent in Crichton’s MIT researcher-turned-superspy John Kenner. With a name remarkably close to *Terminator’s* John Connor, Crichton’s hero heads off a series of explosions designed by malevolent environmentalists to whip up fear and generate support for their cause so they can present solutions to the problems they have created. Kenner almost singlehandedly discovers, explains, prevents, and invalidates the green conspiracy in four remote locations around the world, and along the way he converts a weak man to his cause, allowing his rebirth and recovery, as well as fortifying admiring women who are sexually endangered by the environmentalists’ cannibalistic allies in the South Pacific. Throughout these escapades, Kenner’s body is presented as being as heroically invulnerable as his logic is irrefutable. He is John Connor and the Terminator rolled into one.

Traces of this ultramasculine and robotically unflappable scientist-hero appear in many places in cli-fi. The male romantic lead in Barbara Kingsolver’s *Flight Behavior*, Ovid Byron, certainly falls into this tradition, since he is both physically metamorphic and exceptionally knowledgeable, changing the direction of the heroine’s life in a few short months.¹⁹ The figure is common enough that it is reproduced through satire—especially in

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McEwan's *Solar*, where the central scientist-hero is well past his prime intellectually and trapped in a spiral of domestic and professional decline. Even more vigorously, Nathaniel Rich's *Odds against Tomorrow* satirizes the masculine scientist-hero by taking a nerdy, obsessive statistician as its central figure. Driven by anxiety, not mastery, Rich's hero Mitchell Zukor is intellectually ahead of the curve but survives physically only by chance. His final conversion into a parody of a survivalist hard-body, building a fortified bunker in a former bank and living off the profits of his earlier predictions, makes sense mainly as a satiric play on the heroic adventurer so amply envisioned by Crichton.

Even when they are falling apart (like McEwan's hero) or engaged in over-the-top survivalist paranoia (like Rich's Mitchell), these masculine heroes have little capacity to police a post-apocalyptic environment characterized by a revival of extreme sexual violence. Along with cannibalism, widespread heterosexual rape is repeatedly imagined in cli-fi as a consequence of climate-induced social breakdown. This is especially true in a burgeoning counter-tradition of feminist and queer-positive contributions to the genre. Inspired, perhaps, by the important example of Octavia Butler's *Parable of the Sower* (a 1993 novel focused on strongly empathic responses to racialized and sexual violence in a post-apocalyptic walled city),²⁰ Bacigalupi's Emiko begins the novel as an abused and publicly humiliated sex toy in fortified Bangkok and is repeatedly assaulted, while Atwood's peaceful, vegetarian, collectivist Crakers present a sexual menace to the former prostitutes who have survived the flood, precisely because they were genetically engineered not to experience sexual shame. How an imagined post-apocalyptic society manages sexual violence reveals a good deal about how that author envisions (if she does) the potential for social rebuilding, one capable of resolving conflict, resisting exploitation, and redirecting brutality. Post-apocalyptic sexual violence presents a new cycle of environmental damage in microcosm, particularly in feminist cli-fi.

In Atwood's *MaddAddam*, the peaceful Crakers are successfully educated away from violence, while more vicious pre-collapse rapists are systematically hunted, captured, and (most surprisingly) subjected to trial. Their cruelty is a continuation of the socially approved institutions of sexual exploitation that characterized pre-flood North America in Atwood's trilogy. To distinguish the post-apocalyptic concept of right behavior from the old, a new justice is necessary in order to recognize, punish, and prevent abuses. Once the violent Painballers are finally executed, their remains are symbolically disposed, and the recording of the disposal forms the first episode of the last book. In Atwood's ecofeminist vision, in other words, sexual violence and the abuse of the environment that is entangled with it must be excised, bred out, and actively unlearned so that new values and new writing can emerge. New sexes and new social relations can be redesigned from the remnants of the old.

Bacigalupi's imagination moves in a different direction. Rather than stressing regulatory mechanisms, he depicts a more open-ended and pansexual multiplicity as part of the posthuman condition. Pansexuality is, by implication, an expression of a less exploitative and production-oriented relation to nature. Sexual violence in *The Wind-Up Girl* is mainly associated with forms of heterosexual prostitution and enslavement that aim to reinforce

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human dominion over the nonhuman and masculine dominion over the feminine. The concentration on flesh (as in many scenes in which Emiko is groped or manhandled) encapsulates that desire to grip, control, and drive another organism. Homosexual relations, by contrast, are described in terms of intangible emotional bonds and aesthetic appreciation, even in the case of the disturbing genetic engineer who drools over “lady boys” and wind-up girls alike. The novel closes with Emiko’s escape from her pimp and flight toward a utopian and possibly nonexistent community of genetically modified New People in the North, a community that readers infer will be free from violence or at least capable of multiplying its directions and outcomes by multiplying the body parts involved.

These two celebrated works of cli-fi represent two major efforts to move beyond the residue of science fictional hypermasculinity and toward a more speculative multigender universe. It is genetic code and gender that are signs of the human’s embeddedness in this transforming world. At different registers, the invisible yet expressed code and the social meaning of the gendered body become sites for novelty; they emblemize efforts to transform the human—albeit with unpredictable effects. This theme is one cli-fi shares with sci-fi, but in this genre it fuses the potential for transformative modification to the human with the catachronistic effects of an environmental transformation already underway.

Satires of Cli-Fit

The conventions of cli-fi are already so well established that they have invited satire. In particular, the dystopian conventions of climate-themed films have attracted attention. The media studies scholar E. Ann Kaplan argues in *Climate Trauma* that the white male scientist-hero provides the default perspective for these narratives.²¹ Even when this vantage does not coalesce in a named character, the attitude Kaplan designates as nostalgic masculine melancholy for an imagined future loss sets the terms for a more systemic anticipatory dread. The cynical anomie of the dystopian future, according to Kaplan's account, itself provides a satirical means for imagining the effects of our pre-traumatic present, even while it triggers a satire of its own conventions. This analysis provides a useful premise for considering films such as Bong Joon Ho's *Snowpiercer* or Christopher Nolan's *Interstellar*; these narratives disrupt the presumed heroism of the white male scientist by inserting nonwhite and female counterparts, respectively.²²

While Kaplan turns to feminist variants on dystopia featuring female protagonists, such as Margaret Atwood's *The Handmaid's Tale*, to explore the limitations of masculinist nostalgia as a point of view, some authors of cli-fi have turned inward to dissect the protocol of the nerdy hero.²³ For example, in Nathaniel Rich's *Odds against Tomorrow*, the hero Mitchell Zukor begins the novel as a cliché, the ultra-anxious statistics genius. His fear drives him to calculate the odds of disasters obsessively and develop a complex crush on a female classmate who suffers bravely from a condition that could kill her at any moment. In the middle portions of the novel, as Mitchell's worst fears are realized in a terrible storm, he rushes to her farm, hoping to rescue her from an abusive, crazed boyfriend. This would-be quest quickly inflates to self-satirizing proportions, as Mitchell and a friend advance toward and then retreat from the farm in mock-heroic fashion—first in a gaudily painted canoe and then less glamorously by bus. The satirical inversion is completed when our hero learns, by postcard, that his idol has become an environmental lawyer, taking up the battle that he has renounced in his isolated bunker. Rich's satire, in other words, at once involves exaggeration and undercutting of the characterization, plot structure, and outcome of the quest romance that organizes the dystopian mood so common in cli-fi.

Ian McEwan's *Solar* devotes even more attention to satirizing the scientist-hero's sullied motives and scandalous behavior, making a petty and accidental murderer of his plagiarizing man of reason.²⁴ In *Game Control*, Lionel Shriver also uses thwarted sexual desire to satirize the overweening ambition and pettiness of would-be population control experts.²⁵ Similarly, Margaret Atwood takes apart the authority of the scientist in the character of Crake, a leader in the titular MaddAddam conspiracy. "Mad" in the comic-book sense of mad scientists, Crake has also been wounded and scarred by his father's untimely death, a history of parental problems shared by his friend Jimmy the Snowman and his antagonists Adam One, as well as the omega to his alpha, the bear-like Zeb. But, as observed by Atwood's Toby, a middle-aged wisewoman, his madness also contains an

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extra “dad.” Crake’s madness is compounded by dadness, alphabetically and psychologically. He becomes a mystical father figure for the Crakers he genetically engineers, thus risking a repetition of the patriarchal religiosity that generated his own intense reactions. Atwood’s satire thus underscores the potential for the masculine hero at the center of so much cli-fi to re-create the very crises whose destructive effects he so fearfully anticipates.

The same preoccupation with cult-like authority and the perverse effects of an overemphasis on dread also features prominently in Michael Crichton’s climate-denying bestseller, *State of Fear*.²⁶ Although quite firmly entrenched in the cli-fi tradition of the ultra-masculine scientific hero, this novel also undercuts the genre’s quest plot. Through satiric exaggerations of the powers of organization and financial resources of the activist wings of the environmental movement, Crichton imagines a scenario in which shadowy extremists use explosives to damage Antarctic ice sheets, trigger deadly flooding, and launch a massive tidal wave. The narrative heart of the novel does not consist of its confusing and misleading speeches that attempt to rebut the scientific consensus on the existence and anthropogenic nature of climate change. Crichton’s novel is, instead, best understood as a satire of the dread motif—one opposed in attitude but conceptually similar in part to the satires created by Rich, McEwan, and Atwood.

The implicit argument of these satires (and the explicit thesis for scholars such as Ursula Heise)²⁷ is that cli-fi has too readily restricted itself to a limited set of persons, sites, moods, and effects. Reaching not only beyond the scientist-hero but also beyond the drowned city, dread, and vague open-ended calls to heightened awareness seems vital for the genre’s wellbeing and, more importantly, the planet’s. Satires of cli-fi point toward the genre’s arrival as a bona fide phenomenon and its need for continuing improvement and variation.

Realist Hybrids in Cli-Fi

In criticism devoted to environmental literature and the novel more generally, realism has for several decades been under fire for its purportedly antipolitical comfort with dominant social conditions. In *The Truth of Ecology*, for instance, critic Dana Phillips argues that a predilection for description among realist authors offers at best a clumsy tool for recording perceptions of the natural world, and at worst a misguided confusion of literary technique with scientific method.²⁸ Although literary critics who follow György Lukács in distinguishing realist narration from naturalist description might quibble with Phillips’s conflation of the realist project with description, it is certainly true that ekphrastic meditation on scene has been a recurring feature of realist works on environmental themes. A good deal of attention has been given, since Thoreau’s famous description of the train whistle disturbing the serenity of Walden, to developing prose tools that might capture a scene on the verge of disappearing. Like some of the cli-fi

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satirists, Phillips doubts the effectiveness of this preoccupation and calls for a wilder and more aesthetically innovative approach to writing about ecological systems.

Despite these important critiques, authors of cli-fi have indisputably remained interested in literary realism, testing its history, merits, and flexibility for purposes of the present. Sometimes the results are perhaps too familiarly Dickensian. But some versions of their work also explore alternative geographies and temporalities and push forward to imagine human experiences of the earth in a distinctly contemporary variant of the realist framework.

Barbara Kingsolver's *Flight Behavior*, for instance, combines this author's recurring interest in biological systems with her even more prominent interest in the psychology of women.²⁹ Set in the Appalachian Mountains, the novel links mountains of Mexico and a Caribbean childhood to this location through a swarm of overwintering monarch butterflies. The swarm is described repeatedly, and the plot turns on its reinterpretation, thus fusing description and narration. Local residents interpret the swarm in light of biblical scripture before trying to capitalize on it financially; television journalists cover it as a sensational human interest story; a visiting lepidopterist and his research team see it as evidence of climate change; and a migrant family from Mexico view the butterflies as a sad reminder of their destroyed home. The protagonist conventionally shifts perspective on her home and the visiting swarm, moving from the eschatological and short-term financial interpretation toward the scientific. The red-haired Dellarobia's symbolic identification with the fiery monarchs also launches her into flight as she finally realizes her own need to leave the cocoon of the Appalachian community and pursue higher education. In a classic realist gesture, then, the protagonist abandons illusions—including a romantic attraction to the Caribbean-born scientist—in favor of a more grounded project of self-improvement, a project coupled with a broadening of perspective that allows her to place her own history and ideals on a more global but still unseen map.

Amitav Ghosh's *The Hungry Tide* also situates the perspectives of local informants on a scientifically verified map.³⁰ Set in the Sundarban Islands off the coasts of India and Bangladesh, the novel traces the encounter of an ethnically Indian-American scientist with the dolphins that inhabit that area, as well as with the local people who know the history of the area and the endogamous species. The scientist's GPS mapping device places the tidal islands on a verifiable map, and the use of this device and the grid it encodes play an important part in the resolution of the novel's plot. The tangible solidity of an apparently volatile, fluid, mythic environment is crucial to Ghosh's realism, as is (once again) the conversion of circumscribed locals to the project of gathering knowledge about their locale.

T. C. Boyle's many environmentally themed novels are not all rigidly committed to literary realism. *A Friend of the Earth* in particular alternates between a dystopian near future and a somewhat romantically described eco-activism in the 1980s.³¹ But even this future is presented in a manner characteristic of the downbeat observational irony of the realist, beginning as it does with the muddy shoes, persistent phlegm, and deflated ambitions of

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its aged hero. Boyle has been consistently interested in imaginative investigations of current social issues from gun violence (*The Harder They Come*)³² to identity theft (*Talk Talk*)³³, as well as in carefully researched historical fiction devoted to techno-scientific innovators such as Frank Lloyd Wright (in *The Women*)³⁴, Alfred Kinsey (in *The Inner Circle*)³⁵, and John Harvey Kellogg (in *The Road to Wellville*).³⁶ Boyle's two novels set in the Santa Barbara Channel Islands, *When the Killing's Done* and *San Miguel* (2012)³⁷, unite these interests. Pulling the realist's eye for description, research, and mapping of a social situation into contact with the didactic writer's project of explaining and interpreting a social problem, these two novels examine the control of non-native species and anthropocentric land use regulations, respectively. Aesthetically, they respect the realist convention of distinguishing between imagined action and observational description; striking passages devoted to observable settings such as island cliffs alternate with scenes of impassioned family conflicts. While classically realist in this respect, Boyle nonetheless employs cli-fi's confounding catachronisms—finding a kind of geological or at least climatological drama in the slow transformations of the scene of the islands. He closes *San Miguel* with a burning of keepsakes, letters, magazine articles, even a copy of Mozart's *Requiem*. The note of anticipatory trauma that Kaplan and Aravamudan identify as central to cli-fi is here struck retrospectively. The future damage and regulation of the islands is something that the heroine does not foretell, though the narrator does. "She didn't know that the Navy would use the island as a bombing range or that the house she was standing in would burn mysteriously twenty-seven years later so that only the chimney remained amidst the blowing ash. And she didn't know that the Park Service would finally take charge of all of San Miguel and its waters and that anyone who wanted to come here or dream here or walk the hills and breathe the air would need to have a permit in hand," the narrator reflects in the novel's final pages. This heroine's regretful retrospective mourning unknowingly colors the future that she cannot see and that extends, by implication, beyond the reader's own present. Naturalist or realist description here does the work of building up a temporality of dread that is endemic to the cli-fi genre.

Kingsolver's, Ghosh's, and Boyle's novels are all interested in plagues, from locusts to flood and fire. They fuse realist prose style with an apocalyptic sensibility. While perhaps they do not go far enough in the direction of experimentation to satisfy all of their critics, they do add variety to the three plots that, according to Lawrence Buell, have organized environmental writing since Thoreau: the chronicle, the excursion, and the inventory. In cli-fi, as in environmental literature generally, the apocalyptic mood is absolutely central. Realist, satirical, and dystopian writers are all anchored to some degree in apocalyptic conventions, and ultimately it may be the force (or weakness) of these conventions rather than the secondary style on which the fortunes of the genre lie.

The Future of Cli-Fi

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Given its popularity and potential for deepening understanding of environmental issues (at least among the novel-reading portion of the Anglophone public), climate fiction seems likely to expand its foothold in contemporary fiction. If its authors are responsive to provocations from critics, they will continue to develop new temporalities, moods, and locations, and new stylistic variations as well as new subject matter that will energize the genre. Further experimentation with genre writing, along the lines of David Mitchell's *The Bone Clocks*, seem like a promising direction, as do narratives focused on the environmental and social impact of particular extractive industries (such as the oil industry examined in Helon Habila's *Oil on Water*) or the industrial food system (as in Ruth Ozeki's *My Year of Meats*).³⁸ Habila introduces some visions of spiritual cleansing and healing for human bodies, if not for the land, in his novel, and this motif appears as well in works such as Susan Elderkin's *The Voices* that locate some resistance to industrial and capitalist methods of extraction in so-called traditional cultures (in Elderkin's case, the culture of aboriginal Australians).³⁹ Leslie Marmon Silko's *Gardens in the Dunes* also sounds this note, focusing on the circulation of seeds and cross-pollinations between the traditional cultures of Europe and the Americas.⁴⁰

Whether inflected by magical realism or not, the turn that Habila, Elderkin, and Silko (and, to a lesser extent, Ghosh) make toward alternative modernities also seems a promising direction for cli-fi. Radically diversifying not just the stated identity and perspective of the scientist-hero but also the locations, conflicts, moods, and motives of the genre is crucial for the long-term viability of the genre. Its longer-term success may hinge on the degree to which it takes seriously an engagement with forms of climate rescue that survive crisis.

That said, recognizing and learning from the climate change activism undertaken proactively in the developing world in particular requires interested novelists to resist the metropolitan center's too frequent romanticization of an underdeveloped periphery it imagines as saturated with a spiritual depth that compensates for material deprivation and powerlessness. Rob Nixon and other postcolonial critics have drawn attention to fiction that resists this temptation, such as the sharply biting response to despoliation that appears in Indra Sinha's *Animal's People* (a picaresque fictionalization of responses to the disastrous chemical spill in Bhopal in the 1980s).⁴¹ Similar attention might also be devoted to works such as Thomas King's *The Back of the Turtle* (a humorous fable that also addresses spills and science gone wrong while depicting Native American communities that actively rebound from crisis).⁴² Still others have sought not just an expansion of human voices but also an extension into the deeply posthuman universe of hyperobjects, and a new literature narrating at the scale of and temporality of the animal, the plant, or even the atom or the Earth could potentially result from those provocations. Amid all these current and possible initiatives, though, what remains certain is that the genre of cli-fi will continue to flourish in a broader range of moods, sites, and literary forms so long as the climate crisis continues to worsen. The growing critical recognition

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afforded to this emergent genre is one hopeful sign that a global public may be readying itself to rise to the challenges faced by the planet as a whole.

Those interested in exploring this field further might wish to anchor their research in Wai Chee Dimock's influential work on deep time and postnational planetary spaces.⁴³ Franco Moretti's insights into the lifespan of genres may also provide a fruitful resource for mapping cli-fi.⁴⁴ Finally, in *Molecular Red*, McKenzie Wark challenges theorists to invent new tools for criticism, tools adequate to the concrete problems of the Anthropocene.⁴⁵ He suggests developing a new concept of the Earth, beginning with Jean-Paul Sartre's concept of the practico-inert, or that intractable material that is the object of human activity as well as an effect of labor. Overcoming a romantic conception of pristine, alien wilderness by envisioning the natural world as integrated with sometimes damaging human activity is a pressing task for eco-criticism and cli-fi authors alike.

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