

Climate Crisis as a Challenge for the Humanities

American Frictions



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Climate Crisis as a Challenge for the Humanities



A Reader

Edited by
Karin Esders



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For Yulan and Yalin
Amor Mundi

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Karin Esders

Introduction: Empowering the Humanities

The climate crisis constitutes a profound challenge to humans, more-than-humans, other-than-humans. Rising temperatures driven by greenhouse gas emissions – manifested in melting glaciers, rising sea levels, ocean warming, and extreme weather events – have become a material reality that disrupts life on Earth for everybody and everything. However, not everybody and everything is affected in the same way or at the same time. Neither responsibility for global warming nor exposure to its risks are equally distributed.¹ Instead, the crisis is shaped by stark asymmetries, with so-called “frontline communities” bearing a disproportionate share of its consequences despite contributing least to its causes.² Any meaningful engagement with climate change must therefore attend not only to its environmental dimensions but also to its entanglements with structural inequalities.

The climate crisis constitutes a major challenge to the humanities. No longer understood as the exclusive domain of the natural sciences, climate change has become a central concern of the environmental humanities: under this umbrella term the “humanities+”³ have engaged in critical, inter- and transdisciplinary work to re-consider the social, political, cultural, and ethical implications of climatic transformations. Yet scholars in this field face both external pressures and internal struggles. The destructive fury of contemporary US politics as of 2026 is guided by unashamed climate denial, denunciation, and strategic attacks that seek to reinforce geographically and racially concentrated configurations of power and privilege. Climate change as an ongoing catastrophe is not merely con-

1 According to Oxfam Aotearoa, on 9 January 2026, only ten days into the year, the richest 1% of the world’s population had already exhausted their annual carbon budget, that is, the amount of CO₂ that can be emitted while remaining within the 1.5°C global warming limit (“Richest”).

2 “Frontline communities are those that are disproportionately impacted by climate change, including Black, Indigenous, and People of Color (BIPOC) communities, immigrants and refugees, people living with low incomes, communities experiencing disproportionate pollution exposure, women and gender non-conforming people, LGBTQIA+ people, people who live and/or work outside or depend on natural resources for their livelihoods, those with existing health issues (like asthma and heart disease), pregnant people and people with limited English skills. Children and elderly people are also more vulnerable to climate change impacts.” (“Climate Inequity”)

3 The humanities+ include among others, literary and cultural studies, social sciences, legal studies, geography, social anthropology, philosophy. My thanks go to Ingo Warnke who mentioned the term at the tenth anniversary of the interdisciplinary research platform “Worlds of Contradiction (WOC)” at the University of Bremen.

tested but rendered irrelevant through systematic silencing and withdrawal from international climate agreements. The boosting of extractivism, remilitarization, and authoritarian policies echoes the timeworn hegemonic violence of settler colonialism and racial capitalism. Within these debates or – rather non-debates – “the climate” is instrumentalized to deepen divisions between “us and them.”⁴

The escalating “environmental culture wars” (Fusco and Seymour 72) have tangible consequences for academia, including funding cuts, the dismissal of scholars, and the dismantling of research programs. At the same time, higher education institutions themselves remain embedded in the very ideologies and structures that have produced and sustained environmental destruction. The traditional divide between the sciences (focusing on “nature”) and the humanities+ (studying “culture”) has encouraged compartmentalized responses to the climate crisis. Proposed remedies rely heavily on techno-scientific, incentive-based management strategies that promise an “easy fix.”⁵ Furthermore, as Ursula Heise emphasizes in her introduction to *The Routledge Companion to the Environmental Humanities*, scientific knowledge and technological solutions, while indispensable, are themselves shaped by “socioeconomic inequality, cultural difference, and divergent histories, values, and ethical frameworks” (2). Without interrogating the histories, ethics, and politics that underpin dominant systems of knowledge production, “ecomodern”⁶ promises risk reproducing narrow and universalizing conceptions of human agency, social relations, and change, while failing to account for the complex, situated entanglements of human and non-human worlds. To become a powerful agent in confronting the climate crisis, climate change denial, and sociopolitical disruptions, the environmental humanities have to develop inspirational approaches and knowledge practices that operate outside dichotomized conceptions of science and culture, society and environment, human and non-human.

Against this backdrop, Deborah Bird Rose and her co-editors, in their 2012 editorial launching Duke University’s journal *Environmental Humanities*, outline central questions and methodological orientations coalescing within the emerging field. They call for an effort “to enrich environmental research with a more exten-

4 I would like to thank my students at the University of Bremen for their astute contributions to these matters.

5 As Donna Haraway observes, these paradigms are animated by “a comic faith in technofixes” (3), while Isabelle Stengers critiques such strategies as enabling continued extraction and combustion without accountability or consequence (8).

6 Within ecomodern discourse, economic growth is framed as the foundation for transitioning energy and environmental policies toward a sustainable future. Emerging as a dominant paradigm in energy and environmental policymaking in the early 1990s, ecomodernism promotes the belief that technological innovation and market-driven solutions can reconcile continued economic expansion with ecological sustainability (Hultman 86).

sive conceptual vocabulary, whilst at the same time vitalising the humanities by rethinking the ontological exceptionality of the human” (2). By introducing questions of meaning, value, ethics, justice, and knowledge production into ecocritical debates, the environmental humanities challenge reductionist notions of the self-contained, rational, modern subject and the promise of epistemic certainty. Instead, the field positions humans as participants in “lively ecologies of meaning and value,” entangled within dense patterns of cultural and historical diversity that shape both subjectivity and the possibilities of “becoming with” others (2).

Similarly, Stephanie LeMenager argues that the “humanities after the Anthropocene” must fundamentally rethink human agency and move beyond human-centered epistemologies. Emphasizing relationality, responsibility, and “deep interconnection with other life” (473), she suggests that such a reorientation can foster new practices of togetherness while simultaneously challenging entrenched configurations of power. This perspective requires a critical interrogation of earlier anthropogenic frameworks that center a universalized notion of humanity while effacing social, historical, and structural differences. Likewise, Rebecca Macklin underscores the importance of the environmental humanities for understanding “the foundational logics and infrastructures” of climate change specifically in relation to modernity and coloniality (57). At their best, the environmental humanities “bring into focus developments across the field by exploring what it means in practice to bring other ways of thinking, knowing, and being to the fore” (Macklin 58).

As Alex Moulton observes, several core challenges remain for the environmental humanities: how to examine and articulate questions of place, race, and power without reinscribing racialized difference or evading it altogether; and how to critically engage relations of power without naturalizing them. Scholars have repeatedly pointed to the problematic tendency to conceptualize the climate crisis as a global threat best addressed through Western technologies and knowledges. As Malcolm Ferdinand demonstrates, the historical whiteness of environmental movements and discourses has not only excluded racialized minorities from environmental policies but has also contributed to the marginalization of non-white voices in ecological texts and theories. Drawing on his experience as a Black scholar, Ferdinand identifies several mechanisms that normalize white-centered climate discourse, including the denial of the histories of slavery, colonialism, and imperialism; the universalizing tendencies of the Anthropocene; and the denial of biased knowledge production and recognition (45–47). These “colonial erasures” not only normalize the absence of racialized minorities in environmental discourses but also obscure and render invisible the main drivers of climate change itself (Resurrección 2).

As a result, Indigenous peoples, people of color, and women are frequently framed as especially vulnerable to climate change; however, such framings often essentialize vulnerability and obscure the structural conditions and the slow violence⁷ that produce climate-related marginalization in the first place (Arora-Jonsson). By emphasizing vulnerability without interrogating its causes, dominant accounts deflect attention away from the systemic inequalities that generate and sustain susceptibility. Post- and decolonial feminist praxes therefore call for a critical re-evaluation of dominant understandings and narratives of climate change. Such a paradigmatic shift requires recognizing climate change not as an isolated environmental or natural phenomenon, but as a complex assemblage of colonial legacies, capitalist extraction, and intersecting gendered and racialized injustices (Resurrección 4). To constructively respond to the climate catastrophe, the humanities must therefore account for the unequal causes and consequences of the crisis, unsettling the unmarked whiteness and the Eurocentric, gendered, and classist assumptions that continue to shape dominant climate discourses.

Black, feminist, decolonial, and Indigenous ecologies play a crucial role in this endeavor. Even though or rather because marginalized communities are most susceptible to the effects of climate change, they have generated insurgent knowledges that expose long-standing legacies of uneven relations and geographies (Roane and Hosbey). A widened and flexible understanding of Black and feminist ecologies and Indigenous climate studies offers a way of mapping ongoing vulnerability as a consequence of colonialism and racial capitalism, while simultaneously generating innovative socioecological practices of resistance and kinship (Davis et al. 3). What emerges as crucial, then, is the relationship between vulnerability and resistance, susceptibility and innovative socioecological and cultural practices. Tysczuk and Smith argue that this orientation within the environmental humanities fosters imaginative capacities that can help to grapple with uncertain futures, and difficult-to-imagine transformations. It enables more expansive understandings and supports shifts in perspectives and practices. Productive interventions into hegemonic climate discourses recognize the transformative potential of cultural work, including the roles of the

7 “By slow violence I mean a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all. [. . .] we [. . .] need to engage the representational, narrative, and strategic challenges posed by the relative invisibility of slow violence. Climate change, the thawing cryosphere, toxic drift, biomagnification, deforestation, the radioactive aftermaths of wars, acidifying oceans, and a host of other slowly unfolding environmental catastrophes present formidable representational obstacles that can hinder our efforts to mobilize and act decisively” (Nixon 2).

humanities, the arts, or popular culture. In confronting the uncertainties of living with climate change, multiple frameworks and provisional perspectives can expand the imaginative registers and open spaces for critical and creative engagement. Drawing on Mikhail Bakhtin's dialogism, such an approach resists the monological traditions of Western thought and instead embraces a diversity of perspectives and a polyphony of voices, foregrounding open-ended, relational forms of understanding. What is essential at this moment in time is a multiplicity of discourses that remain open to dialogue and transformation, to controversy and productive contradiction, and that offer potential and unforeseen possibilities for learning and unlearning.

In the humanities+, and not least in American studies, scholarship on climate change has proliferated rapidly, making it increasingly difficult for students, educators, and interested readers to navigate this expanding field. This volume seeks to offer an accessible entry point and conceptual roadmap through the abundance of recent work. Following Ferdinand's articulation of decolonial ecologies – which include Indigenous communities, Black and ecofeminist resistance movements, as well as diverse collectives in the North and the South – this anthology brings together contributions from a wide range of scholars whose work exemplifies the vitality of contemporary interdisciplinary and intersectional debates on the climate crisis. The selected texts juxtapose marginalized and established voices alike, situating their arguments within ongoing critical conversations in the environmental humanities.

The contributions assembled here have been carefully selected and tested in cultural studies courses in the MA program English-speaking cultures at the University of Bremen, where they have proven to be valuable resources for teaching and learning about the cultural dimensions of climatic transformations. While the texts frequently challenge readers with conceptual and theoretical complexity, they have consistently functioned as catalysts for new ways of thinking, opening epistemic horizons and fostering imaginative engagement. For students, these readings have deepened analytical understanding while encouraging reflection on agency, responsibility, and the possibility of intervention. By foregrounding historical, social, cultural, and aesthetic perspectives, the collection deepens an understanding of the causes, effects, and uneven impacts of socioecological crises at local and global scales.

It is in this conjuncture – marked by accelerating climatic disruption, intensifying political backlash, and the persistent reproduction of colonial and racialized epistemologies – that this anthology intervenes. Rather than treating climate change as a singular, technocratic problem awaiting managerial solutions, the contributions gathered here insist on understanding it as a historically situated, structurally produced, and unevenly lived crisis. Bringing together perspectives

from across the environmental humanities and allied fields, this volume foregrounds voices, knowledges, and analytical frameworks that have too often been marginalized or rendered invisible within dominant climate discourse. By centering questions of coloniality, racial capitalism, gendered violence, and epistemic injustice, the anthology seeks not only to critique prevailing paradigms but also to open up space for alternative modes of thinking, narrating, and responding to climate change. In doing so, it positions the humanities not as ancillary to scientific knowledge, but as indispensable to imagining more just, accountable, and transformative climate futures.

The anthology opens with a sparkling contribution by Donna Haraway, who critically interrogates the concept of the Anthropocene. She finds the term misleading not only because of its universalizing tendencies, as noted above, but also because it implies that significant human impact on the planet began with European industrialization. Instead, Haraway points to the Plantationocene and the Capitalocene as more precise designations for the devastating transformations wrought by colonialism and racial capitalism.⁸ Yet, as one might expect, Haraway develops speculative concepts and practices that aim to offer “solace, inspiration, and effectiveness” (*Staying with the Trouble* 49) among them the Chthulucene – an “otherwise” that breaks with human exceptionalism and instead calls for intense commitment, collaborative labor, and playful engagement across species boundaries. As a rich multispecies assemblage, the Chthulucene interweaves myriad temporalities and spatialities and intra-active entities-in-assemblage. Haraway’s proliferating hyphenations and syntactical combinations are not merely stylistic flourishes; her language creates new forms of togetherness, new collective practices of thinking, being, and living with others and other organisms, that invite people (not Man) to generate “oddkin,” and participate in transformative ecoplay. Readers willing to embrace her playful idiom may find themselves participating in a *jeu d’esprit* that stretches the imagination and reshapes stories and concepts. While her slogan “Make kin, not babies!” has not really caught on and met criticism – appearing entangled with adultism or non-natalist politics (see, for example, Mattheis) – the underlying concept of kinship remains vital. As a mode of relation grounded in care, intimacy, and response-ability,⁹ kinship becomes a precondition for multispecies ecojustice. Thus, Haraway urges us to move beyond a state of indecisive agitation, get over human hegemony, and learn to care for unfamiliar kin and oddkin.

⁸ Haraway deliberates these terms in the text reprinted here.

⁹ Response-ability is a capacity to respond to “worldly urgencies with one another” (Haraway 7).

Sharon Stein's article immediately struck me as an excellent teaching tool. Both panoramic and programmatic, her text offers a rigorous overview of modern-colonial logics, critically examines the entanglements of higher education with these structures, and sketches possibilities for transforming knowledge and learning practices. What Hubbell and Ryan describe as a "WEIRD" definition of the good life¹⁰ is reframed in Stein's work as a modern-colonial habit-of-being (Shotwell). She identifies colonialism not only as the primary cause of climate change but also as a condition of possibility for modern higher education and ecological unsustainability. The promises of modernity – endless growth, predictability, choice, order, stable identity, wealth, autonomy, protection within nation-states, and accumulation without consequence – remain deeply alluring. Yet their underside – colonialism, extractivism, exploitation, genocide, and ecocide – is persistently disavowed, externalized, and denied by those invested in maintaining modern habits-of-being. Stein suggests that, if used responsibly, higher education institutions could become sites for learning how to disinvest from these harmful attachments and confront the denials that sustain them. In addressing how students might prepare for an uncertain future, she highlights three interrelated dimensions: the intellectual, the relational, and the affective. Together, these facets open possibilities for moving beyond both paralysis in the face of devastation and a reductive faith in "sustainability" as a sufficient response.

Romy Opperman advances Black feminist hauntology as a foundation for a transformative vision of transgenerational climate justice. Drawing on Derrida and Black feminist thought, she explores the ecological dimensions of hauntology, particularly its implications for conceptions of justice that exceed the limits of the present and cultivate responsibility toward past and future beings. Derrida's conceptualization of hauntology challenges Western philosophy's privileging of presence by insisting that we attend to that which is "neither living nor dead, present nor absent," since there can be no justice without responsibility that extends beyond the living present (63). In this sense, hauntology offers a critical departure from the presentism and human exceptionalism that shape dominant framings of climate change. With its radically trans- and intergenerational orientation Black feminist climate justice underscores the necessity of confronting past and ongoing systems of violence and assuming historical and collective accountability in order to imagine futures that do not merely reproduce the past. In Opperman's formulation, "making kin" is further expanded:

10 "The Western, Educated, Industrialized, Rich Democracies' (WEIRD) definition of 'the Good Life' just so happens to immiserate billions of other people, cause mass species extinction, and destabilize the climate on which we all depend. This is a cultural problem, not a scientific one" (30).

kinship encompasses not only other-than-humans, but also kin across temporal boundaries – past and present, living and dead.

Françoise Vergès takes up many elements discussed so far but reframes them through a distinctly socio-political lens. She argues that climate change is not the result of generalized human hubris, but rather the outcome of the long history of colonialism and racial capitalism, with its systematic exploitation of “cheap nature” and “cheap labor”. The concept of the Capitalocene reintroduces history, difference, and power relations into the debate, elucidating the enduring effects of colonialism: environmental destruction, global organization of a mobile, racialized, gendered, and disposable workforce. For Vergès, the task is to analyze asymmetries of power rather than to invoke universalizing abstractions such as a supposed human drive toward destruction. She advocates a radical pedagogy grounded in the decolonization of knowledge production – one that acknowledges diverse lived realities and addresses multiple publics – while challenging dehumanizing forms of work in favor of shared, life-affirming labor practices.

Connecting feminism, capitalism, and ecology, Johanna Oksala offers a philosophical critique of materialist and Marxist ecofeminism. She argues that human-induced climate change demands political and economic transformations that have to contest the logic of capitalism itself. Feminism can and must engage in this task if it is to remain a meaningful political force in the twenty-first century. What is required, she contends, is an account capable of analyzing the diverse and sometimes contradictory mechanisms for the capitalization of nature. Feminist critique can no longer be limited to preserving a notion of “nature” outside the market; it must interrogate capitalism’s expanding capacity to subsume life into its circuits of value. At stake are both the transformation of exploitative social relations and the protection of the more-than-human world. Determining which forms of biological life are drawn into commodification and which remain outside becomes an ethical and political question, making the negotiation of the limits of the market a central task for contemporary feminist theory.

As Kylie Whyte demonstrates, Indigenous scholars and activists have introduced crucial perspectives into climate discourse. For many Indigenous communities, severe environmental transformation is not unprecedented but part of a long history of anthropogenic change tied to colonialism, capitalism, and industrialization. Climate injustice thus appears less as a future threat than as a recurring pattern – “more like the experience of *déjà vu*” (88) as Whyte argues elsewhere – an intensification of colonially induced violence manifest in geographic, social, and psycho-cultural displacements. These histories of forced adaptation make Indigenous approaches to environmental change particularly instructive. The renewal of Indigenous ecological knowledges – relational epistemologies grounded in interdependence among human and other-than-human beings – supports both

self-determination and context-specific adaptation strategies. In this sense, Indigenous climate change studies not only reframe dominant narratives of the Anthropocene but also expand how histories and futures are understood, with the aim of sustaining Indigenous flourishing across generations.

Whereas the first section of this anthology develops and clarifies key theoretical positions, the second turns to concrete practices, aesthetic strategies, and case studies. Sarah Vaughn's brief contribution functions as an interlude between these parts. Vaughn argues that climate activism extends beyond protests and demonstrations, emphasizing instead the mobilizing force of storytelling and visual media for environmental movements. Because such interventions are not confined to the global North, climate activism must be understood as having multiple and heterogeneous origin stories. A central task of this activism, she suggests, is to narrate the connections between local experiences and the planetary dimensions of climate change. Careful attention to its narrative forms and visual repertoires can thus help to trace both the struggles and the possibilities that shape contemporary climate politics. The texts in the second section exemplify such analyses.

Blanche Verlie and Astrida Neimanis outline key methodological orientations of the environmental humanities, including immersive practices grounded in attention and attunement to more-than-human worlds, situated learning that privileges lived and experiential forms of education, and sensorial modes of engagement. These methodologies inform their analysis of breath as a mode of witnessing that is embodied and deeply personal while simultaneously relational. It enables attunement to the climatic experiences of other beings, thereby recognizing our own inseparability from them. At the same time, Verlie and Neimanis acknowledge the limits of embodied attunement for grasping the historical, political, and ethical entanglements of climate change within capitalist, colonial, and heteropatriarchal formations. Embodied witnessing, they argue, must therefore be complemented by other modes of knowing drawn from science, art, literature, and critical theory. By integrating creative and personal practices – such as photography, video, and creative nonfiction – with rigorous intersectional analysis, the authors propose what they term “conspiratorial witnessing”: an ethical and epistemic stance that compels recognition of our implication in the very catastrophe we seek to observe.

An emerging strand of the environmental humanities examines how energy regimes – and fossil fuels in particular – shape social relations, cultural imagines, as well as political and economic power.¹¹ The works of Cara Daggett and

¹¹ See, for example, Szeman and Boyer.

Sheena Wilson can be regarded as formative interventions in this area. Daggett offers a bracing feminist reading of climate change denial and fossil-fuel boosterism, analyzing the entanglement of masculinity and fossil fuels. In her account, fossil fuels are not only instruments of profit and privilege but also technologies of identity formation, producing what she terms petro-masculinity, a formation closely tied to white patriarchal rule and authoritarianism. Climate change denial, she argues, is not simply the result of inadequate scientific communication but must also be understood through the psycho-affective dimensions of desire. Hypermasculine ideals – valorizing toughness, technological mastery, and growth – mask vulnerabilities and render care-oriented responses to climate crisis subordinate, while also helping to legitimize authoritarian tendencies that seek to secure fossil-fueled ways of life.

Sheena Wilson, who partially revised her article for this reprint, likewise adopts a feminist and media-critical perspective, focusing on how petro-discourses circulate through advertising, fashion, and mainstream journalism. Her analysis shows how visual and narrative framings normalize Western women's association with oil while marginalizing environmental and Indigenous resistance, such as the Idle No More movement in Canada. Campaigns like Ethical Oil mobilize stark contrasts between “liberated” Western femininity and racialized others, thereby depoliticizing fossil fuel extraction and recasting Indigenous activism in ways that can undermine solidarity and even criminalize community members.¹² Together, Daggett and Wilson demonstrate that fossil fuels operate not only as energy sources but as cultural and ideological forces that reproduce gendered, racial, and colonial hierarchies, making petro-politics a key site for intersectional critique.

Neel Ahuja examines Northern literary and visual spectacles of mass extinction that recast climate disaster through settler-colonial fears and fantasies. His readings show how such texts universalize responsibility while masking colonial violence and provincializing security discourse. The texts oscillate between anxiety over lost privilege and fantasies of a purified, posthuman world. In contrast, Indigenous and Southern perspectives unsettle the Anthropocene's claim to a universal humanity. Junot Díaz' notion of cannibal capitalism – where the ultra-rich consume not-quite-alive people and nations – finds narrative form in Indra Sinha's novel *Animal's People*, which fictionalizes life after the Bhopal disaster. Here, mass death extinguishes particular lives without ending *Life* as an ecological process; life remains resilient, insurgent against an apocalyptic landscape. Ahuja shows that, despite a necropolitical regime that renders populations sur-

12 Most of these images and advertisements remain readily accessible online.

plus and disposable, Southern imaginaries can redirect attention toward responsibility, redress, and precarious ecological futures.

Kathryn Yusoff and Jennifer Gabrys examine the terrain of the imagination to trace how anthropogenic climate change materializes across culture and society. They conceptualize imagination as a mode of seeing, sensing, thinking and dreaming that participates in knowledge formation and can catalyze both material interventions and political sensibilities. Drawing on literary, filmic, artistic, and scientific practices, they demonstrate the constitutive role of the arts and humanities in shaping climate representations. Their attention to the interplay between scientific practices and imaginative forms resonates with the methodological concerns outlined by Blanche Verlie and Astrida Neimanis. At the same time, the density of examples and conceptual nuance in Yusoff and Gabrys's work opens an interdisciplinary space that moves readers across – and beyond – the boundaries of the academy.

In her discussion of climate cinema, Alexa Weik von Mossner distinguishes between spectacular, apocalyptic visions of climate change and more ecotopian films that imagine less pessimistic futures. To understand how such films engage viewers, she examines their ethical and affective dimensions across both fiction and documentary. While catastrophic scenarios may evoke distress or discomfort, she argues that these responses do not necessarily produce apathy or disengagement. Her primary focus, however, is on ecotopian works, which she reads through Ernst Bloch's notion of concrete utopianism – a form of socially grounded dreaming with transformative potential that remains bound to hope.

Laura op de Beke argues that most climate videogames reproduce technofuturist, growth-oriented imaginaries, a tendency she explains through the logic of premediation, which multiplies possible futures while narrowing them to those compatible with present neoliberal frameworks. Because their procedural, repetitive structures privilege mastery, optimization, and prediction, such games often foster the illusion that planetary crises can be simulated and controlled. Her reading of *Fate of the World* shows how scientific modelling, punitive failure loops, and techno-fix solutions reinforce a sense of inevitability and foreclose structural critique. By contrast, *The Stillness of the Wind* suspends progress and mastery, foregrounding slowness, loss, and uncertainty, and thus opens alternative affective and temporal relations to climate change that resist the closure of the future.

Last but not least, Keith Moser reads climate denial as a particularly lethal form of post-truth misinformation through Jean Baudrillard and inoculation theory. Baudrillard's notion of hyperreality – an informational environment in which signs circulate detached from empirical verification – clarifies how anti-scientific echo chambers normalize false equivalences despite an overwhelming

scientific consensus on anthropogenic warming. In this post-factual context, political and media actors erode the legitimacy of climate science through the strategic production of “alternative facts.” While Baudrillard offers no clear exit from hyperreality, Moser sketches counter-hegemonic practices: targeted climate communication, media literacy, and strategic reframing can operate as forms of inoculation that disrupt the self-reinforcing logic of simulation.

In the process of selecting the contributions for this anthology, I was necessarily unable to include a number of texts that have also been helpful in teaching and research contexts. It therefore seems appropriate to gesture briefly toward a small selection of works that can productively supplement a curriculum on the climate crisis. An accessible point of entry is Robert Wilson’s essay “Will the End of the World Be on the Final Exam?,” whose pedagogical strength lies in its capacity to translate the abstractions of climate discourse into the affective and institutional realities of student life. The article by Davis et al. “Anthropocene, Capitalocene, . . . Plantationocene?: A Manifesto for Ecological Justice in an Age of Global Crises” advances Donna Haraway’s text reprinted in this volume by foregrounding the centrality of racial politics and the ongoing colonial-racial legacies of the plantation.

For additional perspectives from film studies, readers may wish to consult Sophie Christman Lavin and E. Ann Kaplan’s “The Climate of Ecocinema” as well as Adrian Ivakhiv’s “Green Film Criticism and Its Futures,” both of which offer valuable frameworks for analyzing cinematic engagements with environmental crisis and for situating ecocinema within broader debates in the environmental humanities. Julie Sze discusses abolitionist climate justice narratives that enact an imaginative reclamation and recognition within a brutalizing economic and political system using the example of the web series *The North Pole*. Kali Simmons theorizes time, contamination, and kinship alongside the work of Navajo artist Will Wilson. Charles Green et al. explore artistic, cinematic, televisual, and narrative practices that have shaped the communication of the climate crisis, while Haastrup and Marshall examine the role of the influencer in the age of climate disaster.

Finally, I wish to mention another article by Johanna Oksala that complements her contribution to this volume. In “Climate Change as an Existential Threat: Environmental Politics in the Shadow of Nihilism,” Oksala approaches the climate crisis through the lens of Hannah Arendt. In the face of contemporary political aggression and resurgent resource wars, the current situation can generate feelings of hopelessness, climate anxiety, or nihilism. Against this backdrop, Arendt’s concept of *amor mundi* calls for renewed engagement with the world rather than withdrawal from political, social, or environmental crises. *Amor mundi* entails nurturing the endangered common trans-species and transgenera-

tional reality: as a devoted commitment to futurity rather than to individual self-interest, it requires recognizing that the world is only temporarily entrusted to us and must be preserved for those who follow, while also affirming the human capacity to initiate new beginnings and profound transformations.

The articles assembled in this volume demonstrate that the debates in the environmental humanities strive to confront the complex entanglements of the present by fostering a deeper sense of responsibility toward humans, more-than-humans, and other-than-humans alike. Moreover, they challenge dominant narratives of the climate crisis and its proposed solutions, urging a rethinking of conventional frameworks of knowledge, power, and agency. Rather than offering easy fixes, this collection foregrounds the necessity of critical, relational, and transformative modes of thought and practice. However, as an ongoing intervention, the humanities must be prepared to unrelentingly confront tyrannical forces of world-abandonment and destruction.

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Donna Haraway

1 Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin

There is no question that anthropogenic processes have had planetary effects, in inter/intra-action with other processes and species, for as long as our species can be identified (a few tens of thousands years); and agriculture has been huge (a few thousand years). Of course, from the start the greatest planetary terraformers (and reformers) of all have been and still are bacteria and their kin, also in inter/intra-action of myriad kinds (including with people and their practices, technological and otherwise).¹ The spread of seed-dispersing plants millions of years before human agriculture was a planet-changing development, and so were many other revolutionary evolutionary ecological developmental historical events.

People joined the bumptious fray early and dynamically, even before they/we were critters who were later named *Homo sapiens*. But I think the issues about naming relevant to the Anthropocene, Plantationocene, or Capitalocene have to do with scale, rate/speed, synchronicity, and complexity. The constant question when considering systemic phenomena has to be, when do changes in degree become changes in kind, and what are the effects of bioculturally, biotechnically, biopolitically, historically situated people (not Man) relative to, and combined with, the effects of other species assemblages of other biotic/abiotic forces? No species, not even our own arrogant one, pretending to be good individuals in so-called modern Western scripts, acts alone; assemblages of organic species and of abiotic actors make history, the evolutionary kind and other kinds too.

But, is there an inflection point of consequence that changes the name of the “game” of life on earth for everybody and everything? It’s more than climate change; it’s also extraordinary burdens of toxic chemistry, mining, depletion of lakes and rivers under and above ground, ecosystem simplification, vast genocides of people and other critters, etc, etc, in systemically linked patterns that threaten major system collapse after major system collapse after major system collapse. Recursion can be a drag.

¹ Intra-action is a concept given us by Karen Barad. I keep using inter-action too in order to remain legible to audiences who do not yet understand the radical change Barad’s analysis demands, but probably out of my linguistically promiscuous habits, as well.

Anna Tsing in a recent paper called “Feral Biologies” suggests that the inflection point between the Holocene and the Anthropocene might be the wiping out of most of the refugia from which diverse species assemblages (with or without people) can be reconstituted after major events (like desertification or clear cutting, or, or, . . .). This is kin to the World-Ecology Research Network coordinator Jason Moore’s arguments that cheap nature is at an end; cheapening nature cannot work much longer to sustain extraction and production in and of the contemporary world because most of the reserves of the earth have been drained, burned, depleted, poisoned, exterminated, and otherwise exhausted. Vast investments and hugely creative and destructive technology can drive back the reckoning, but cheap nature is really over. Anna Tsing argues that the Holocene was the long period when refugia, places of refuge, still existed, even abounded, to sustain reworlding in rich cultural and biological diversity. Perhaps the outrage meriting a name like Anthropocene is about the destruction of places and times of refuge for people and other critters. I along with others think the Anthropocene is more a boundary event than an epoch, like the K-Pg boundary between the Cretaceous and the Paleogene.² The Anthropocene marks severe discontinuities; what comes after will not be like what came before. I think our job is to make the Anthropocene as short/thin as possible and to cultivate, with each other in every way imaginable epochs to come that can replenish refuge.

Right now, the Earth is full of refugees, human and not, without refuge.

So, I think a big new name, actually more than one name, is warranted. Thus, Anthropocene, Plantationocene,³ and Capitalocene (Andreas Malm’s and Jason

2 I owe Scott Gilbert for pointing out, during the *Ethnos* conversation and other interactions at Aarhus University in October 2014, that the Anthropocene (and Plantationocene) should be considered a boundary event like the K-Pg boundary, not an epoch. See footnote 3, below.

3 In a recorded conversation for *Ethnos* at the University of Aarhus in October 2014, the participants collectively generated the name Plantationocene for the devastating transformation of diverse kinds of human-tended farms, pastures, and forests into extractive and enclosed plantations, relying on slave labor and other forms of exploited, alienated, and usually spatially transported labor. The transcribed conversation is published in *Ethnos* (“Anthropologists are Talking”). See also the website for AURA, Aarhus University Research on the Anthropocene <http://anthropocene.au.dk/>. Scholars have long understood that the slave plantation system was the model and motor for the carbon-greedy machine-based factory system that is often cited as an inflection point for the Anthropocene. Nurtured in even the harshest circumstances, slave gardens not only provided crucial human food, but also refuges for biodiverse plants, animals, fungi, and soils. Slave gardens are an underexplored world, especially compared to imperial botanical gardens, for the travels and propagations of myriad critters. Moving material semiotic generativity around the world for capital accumulation and profit – the rapid displacement and reformulation of germ plasm, genomes, cuttings, and all other names and forms of part organisms and of deracinated plants, animals, and people – is one defining operation of the Plantatio-

Moore's term before it was mine).⁴ I also insist that we need a name for the dynamic, ongoing sym-chthonic forces and powers of which people are a part, within which ongoingness is at stake. Maybe, but only maybe, and only with intense commitment and collaborative work and play with other terrans, flourishing for rich multispecies assemblages that include people will be possible. I am calling all this the Chthulucene – past, present, and to come.⁵ These real and possible timespaces are not named after SF writer H. P. Lovecraft's misogynist, racial-nightmare monster Cthulhu (note the spelling difference), but rather after the diverse, earth-wide tentacular powers and forces and collected things with names like Naga, Gaia, Tangaroa (burst from water-full Papa), Terra, Haniyasuhime, Spider Woman, Pachamama, Oya, Gorgo, Raven, and A'akuluujjusi, and many many more. "My" Chthulucene, even burdened with its problematic Greekish tendrils, entangles myriad temporalities and spatialities and myriad intra-active entities-in-assemblages – including the more-than-human, other-than-human, inhuman, and human-as-humus. Even rendered in an American English-language text like this one, Naga, Gaia, Tangaroa, Medusa, Spider Woman, and all their kin are some of the many thousand names proper to a vein of SF that Lovecraft could not have imagined or embraced – namely, the webs of speculative fabulation, speculative feminism, science fiction, and scientific fact.⁶

nocene, Capitalocene, and Anthropocene taken together. The Plantationocene continues with ever-greater ferocity in globalized factory meat production, monocrop agribusiness, and immense substitutions of crops like oil palm for multispecies forests and their products that sustain human and nonhuman critters alike. The participants in the *Ethnos* conversation included Noboru Ishikawa, Anthropology, Center for South East Asian Studies, Kyoto University; Anna Tsing, Anthropology, University of California at Santa Cruz; Donna Haraway, History of Consciousness, University of California at Santa Cruz; Scott F. Gilbert, Biology, Swarthmore; Nils Bubandt, Department of Culture and Society, Aarhus University; and Kenneth Olwig, Landscape Architecture, Swedish University of Agricultural Sciences. Gilbert has adopted the term Plantationocene for key arguments in his Coda to the second edition of the widely used textbook by Gilbert and Epel.

4 Personal email communications from both Jason Moore and Alf Hornborg in late 2014 told me Malm proposed the term Capitalocene in a seminar in Lund, Sweden, in 2009, when he was still a graduate student. I first used the term independently in public lectures starting in 2012. Moore edited a book with essays by Moore, Malm, myself, and Elmar Altvater. Our collaborative webs thicken.

5 The suffix "-cene" proliferates! I risk this overabundance because I am in the thrall of the root meanings of -cene/kainos, namely, the temporality of the thick, fibrous, and lumpy "now," which is ancient and not.

6 "Os Mil Nomes de Gaia/the Thousand Names of Gaia" was the generative international conference organized by Eduardo Viveiros de Castro, Déborah Danowski, and their collaborators in September 2014 in Rio de Janeiro. Some in Portuguese and some in English, many of the talks from the conference can be watched on <https://www.youtube.com/c/osmilnomesdegaia/videos>.

It matters which stories tell stories, which concepts think concepts. Mathematically, visually, and narratively, it matters which figures figure figures and which systems systematize systems.

All the thousand names are too big and too small; all the stories are too big and too small. As Jim Clifford taught me, we need stories (and theories) that are just big enough to gather up the complexities and keep the edges open and greedy for surprising new and old connections.

One way to live and die well as mortal critters in the Chthulucene is to join forces to reconstitute refuges, to make possible partial and robust biological-cultural-political-technological recuperation and recomposition, which must include mourning irreversible losses. Thom van Dooren and Vinciane Despret taught me that.⁷ There are so many losses already, and there will be many more. Renewed generative flourishing cannot grow from myths of immortality or failure to become-with the dead and the extinct. There is much work for Orson Scott Card's *Speaker for the Dead*, and even more for Ursula K. Le Guin's worlding in *Always Coming Home*.

I am a compost-ist, not a posthuman-ist: we are all compost, not posthuman. The boundary that is the Anthropocene/Capitalocene means many things, including that immense irreversible destruction is really in train, not only for the eleven billion people or so who will be on earth near the end of the twenty-first century, but for myriads of other critters too. (The incomprehensible but sober number of around eleven billion will only hold if current worldwide birth rates of human babies remain low; if they rise again, all bets are off). The edge of extinction is not just a metaphor; system collapse is not a thriller. Ask any refugee of any species.

The Chthulucene needs at least one slogan (of course, more than one); still shouting "Cyborgs for Earthly Survival," "Run Fast, Bite Hard," and "Shut Up and Train," I propose "Make Kin Not Babies!" Making kin is perhaps the hardest and most urgent part. Feminists of our time have been leaders in unraveling the supposed natural necessity of ties between sex and gender, race and sex, race and nation, class and race, gender and morphology, sex and reproduction, and reproduction and composing persons (our debts here are due especially to Melanesians, in alliance with Marilyn Strathern and her ethnographer kin). If there is to be multispecies ecojustice, which can also embrace diverse human people, it is

My contribution on the Anthropocene and the Chthulucene was done by Skype, and is available at <https://www.youtube.com/watch?v=1x0oxUH0IA8>.

⁷ For a wealth of important essays by Vinciane Despret, translated into English, see *Angelaki*; Buchanan et al.; Haraway "A Curious Practice".

high time that feminists exercise leadership in imagination, theory, and action to unravel the ties of both genealogy and kin, and kin and species.

Bacteria and fungi abound to give us metaphors; but, metaphors aside (good luck with that!), we have a mammalian job to do, with our biotic and abiotic sym-poietic collaborators, co-laborers. We need to make kin sym-chthonically, sym-poetically. Who and whatever we are, we need to make-with – become-with, compose-with – the earth-bound (thanks for that term, Bruno Latour-in-anglophone-mode).

We, human people everywhere, must address intense, systemic urgencies; yet, so far, as Kim Stanley Robinson put it in *2312*, we are living in times of “The Dithering” (in this SF narrative, lasting from 2005 to 2060 – too optimistic?), a “state of indecisive agitation.”⁸ Perhaps the Dithering is a more apt name than either the Anthropocene or Capitalocene! The Dithering will be written into earth’s rocky strata, indeed already is written into earth’s mineralized layers. Sym-chthonic ones don’t dither; they compose and decompose, which are both dangerous and promising practices. To say the least, human hegemony is not a sym-chthonic affair. As ecosexual artists Beth Stephens and Annie Sprinkle say, composting is so hot!

My purpose is to make “kin” mean something other/more than entities tied by ancestry or genealogy. The gently defamiliarizing move might seem for a while to be just a mistake, but then (with luck) appear as correct all along. Kin-making is making persons, not necessarily as individuals or as humans. I was moved in college by Shakespeare’s punning between *kin* and *kind* – the kindest were not necessarily kin as family; making kin and making kind (as category, care, relatives without ties by birth, lateral relatives, lots of other echoes) stretch the imagination and can change the story. Marilyn Strathern taught me that relatives in British English were originally “logical relations” and only became “family members” in the seventeenth century – this is definitely among the factoids I love (“Shifting Relations”).⁹ Go outside English, and the wild multiplies.

I think that the stretch and recomposition of kin are allowed by the fact that all earthlings are kin in the deepest sense, and it is past time to practice better care of kinds-as-assemblages (not species one at a time). Kin is an assembling sort of word. All critters share a common “flesh,” laterally, semiotically, and genealog-

⁸ This extraordinary SF narrative won the Nebula Award for best novel.

⁹ Making kin is a surging popular practice, and new names are also proliferating. See Lizzie Skurnick for “kinnovator,” a person who makes family in non-conventional ways, to which I add kinnovation. Skurnick also proposes “clanarchist.” These are not just words; they are clues and prods to earthquakes in kin making that are not limited to Western family apparatuses, hetero-normative or not. I think babies should be rare, nurtured, and precious; and kin should be abundant, unexpected, enduring, and precious.

ically. Ancestors turn out to be very interesting strangers; kin are unfamiliar (outside what we thought was family or gens), uncanny, haunting, active.¹⁰

Too much for a tiny slogan, I know. Still, try. Over a couple hundred years from now, maybe the human people of this planet can again be numbered two or three billion or so, while all along the way being part of increasing well being for diverse human beings and other critters as means and not just ends.

So, make kin, not babies! It matters how kin generate kin.¹¹

10 “Gens” is another word, patriarchal by origin, with which feminists are playing. Origins and ends do not determine each other. Kin and gens are littermates in the history of Indo European languages. In hopeful intra-actional communist moments, check out Bear et al. The writing is perhaps too dry (although the summary bullet posts help), and there are no juicy examples to make this Manifesto seduce the spoiled reader; but the references give huge resources to do all that, most the fruit of long-term, intimately engaged, deeply theorized ethnographies. See especially Tsing, *The Mushroom*. The precision of the methodological approach in Bear et al. is in its address to those would-be Marxists or other theorists who resist feminism, and who therefore don’t engage the heterogeneity of real life worlds but stay with categories like Markets, the Economy, and Financialization (or, I would add, Reproduction, Production, and Population – in short, the supposedly adequate categories of standard liberal and non-feminist socialist political economy). Go, Honolulu’s Revolution Books and all your kin!

11 My experience is that those I hold dear as “our people,” on the left or whatever name we can still use without apoplexy, hear neo-imperialism, neo-liberalism, misogyny, and racism (who can blame them?) in the “Not Babies” part of “Make Kin Not Babies.” We imagine that the “Make Kin” part is easier and ethically and politically on firmer ground. Not true! “Make Kin” and “Not Babies” are both hard; they both demand our best emotional, intellectual, artistic, and political creativity, individually and collectively, across ideological and regional differences, among other differences. My sense is that “our people” can be partially compared to some Christian climate-change deniers: beliefs and commitments are too deep to allow rethinking and refeeling. For our people to revisit what has been owned by the right and by development professionals as the “population explosion” can feel like going over to the dark side.

But denial will not serve us. I know “population” is a state-making category, the sort of “abstraction” and “discourse” that remake reality for everybody, but not for everybody’s benefit. I also think that evidence of many kinds, epistemologically and affectively comparable to the varied evidence for rapid climate change, shows that 7–11 billion human beings make demands that cannot be borne without immense damage to human and nonhuman beings across the earth. This is not a simple causal affair; ecojustice has no allowable one-variable approach to the cascading exterminations, immiserations, and extinctions on today’s earth. But blaming Capitalism, Imperialism, Neoliberalism, Modernization, or some other “not us” for ongoing destruction webbed with human numbers will not work either. These issues demand difficult, unrelenting work; but they also demand joy, play, and response-ability to engage with unexpected others. All parts of these issues are much too important for Terra to hand them over to the right or to development professionals or to anybody else in the business-as-usual camps. Here’s to Odd Kin – non-natalist and off-category!

We must find ways to celebrate low birth rates and personal, intimate decisions to make flourishing and generous lives (including innovating enduring kin–kinnovating) without making

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more babies – urgently and especially, but not only, in wealthy high-consumption and misery-exporting regions, nations, communities, families, and social classes. We need to encourage population and other policies that engage scary demographic issues by proliferating other-than-natal kin – including non-racist immigration, environmental, and social support policies for new comers and “native-born” alike (education, housing, health, gender and sexual creativity, agriculture, pedagogies for nurturing other-than-human critters, technologies and social innovations to keep older people healthy and productive, etc etc).

The inalienable personal “right” (what a word for such a mindful bodily matter!) to birth or not to birth a new baby is not in question for me; coercion is wrong at every imaginable level in this matter, and it tends to backfire in any case, even if one can stomach coercive law or custom (I cannot). On the other hand, what if the new normal were to become a cultural expectation that every new child have at least three lifetime committed parents (who are not necessarily each other’s lovers and who would birth no more new babies after that, although they might live in multi-child, multi-generational households)? What if serious adoption practices for and by the elderly became common? What if nations that are worried about low birth rates (Denmark, Germany, Japan, Russia, white America, more) acknowledged that fear of immigrants is a big problem, and that racial purity projects and fantasies drive resurgent pronatalism? What if people everywhere looked for non-natalist kinnovations to individuals and collectives in queer, decolonial, and indigenous worlds, instead of to European, Euro-American, Chinese, or Indian rich and wealth-extracting sectors?

As a reminder that racial purity fantasies and refusal to accept immigrants as full citizens actually drive policy now in the “progressive” “developed” world (see Hakim). Rusten Hogness wrote in a Facebook post on 9 April 2015, “What is wrong with our imaginations and with our ability to look out for one another (human and non-human alike) if we can’t find ways to address issues raised by changing age distributions without making ever more human babies? We need to find ways to celebrate young folks who decide not to have kids, not add nationalism to the already potent mix of pro-natalist pressures on them.” Pronatalism in all its powerful guises ought to be in question almost everywhere. I keep “almost” as a reminder about the consequences of genocide and displacement for peoples – an ongoing scandal.

The “almost” is also a prod to remember contemporary sterilization abuse, shockingly inappropriate and unusable means of contraception, reduction of women and men to ciphers in old and new population control policies, and other misogynist, patriarchal, and ethnicist/racist practices built into business as usual around the world. (For example, see Wilson).

We need each others’ risk-taking support big time on all these matters.

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Sharon Stein

2 The Ethical and Ecological Limits of Sustainability: A Decolonial Approach to Climate Change in Higher Education

A growing number of colleges and universities have incorporated responses to climate change into their physical infrastructures, curricula, community outreach, and research priorities, often under the heading of “sustainability” (Henderson et al.; Vaughter et al.). Some have created entire sustainability offices, policies, and plans, and signed national and international declarations that pledge to “work toward implementing sustainability within their institutions” (Vaughter et al. 83). Students have also started to demand a more robust response from their institutions; for instance, through fossil-fuel divestment campaigns that target endowments (Grady-Benson and Sarathy). However, within mainstream scholarship and practice about climate change, the horizon of hope is for institutions (of higher education and otherwise) to become more sustainable while maintaining business as usual – or, as Baskin describes it, “business as usual, but greener” (165). By initiating a conversation at the intersections of decolonial studies, sustainability studies, and higher education studies, in this article I consider the ethical and ecological limits of maintaining sustainability as an orienting horizon.

In starting this conversation, I work from the premise that “[w]e don’t just have a knowledge problem – we have a habit-of-being problem” (Shotwell 38).¹ Specifically, the currently dominant (modern-colonial) habit-of-being is ethically harmful and ecologically unsustainable, given that it is premised on the denial of our entanglement and the ceaseless racialized exploitation and expropriation of labor, land, and “natural resources.” Further, because modern higher education institutions developed alongside and through colonialism and remain structurally dependent upon colonialism for their continued existence (Boggs and Mitchell; Stein, “Colonial History”; Wilder), these institutions and those of us who work and study within them have reached an impasse. That is, even as “we find ourselves already in the midst of everyday social and ecological catastrophes, existential risks and uncertain futures” (Rousell 138), we remain invested in the continuity of a modern-colonial system that is both modern higher education’s

1 Like Shotwell, I refer periodically to ‘we’, as well as ‘us’ and ‘our’ in this article. In doing so, I am not assuming that I am addressing a universal, equally complicit audience, but rather identifying myself as one of the people who embody and remain invested in a modern-colonial habit-of-being.

condition of possibility and the root cause of climate change. As long as we remain invested in this continuity, we will continue to deny the racial and ecological violence that has been inflicted by this system, the inherent unsustainability of the system, and the fact that climate change will likely spell an end to this system.

As Davis and Todd argue, “The story we tell ourselves about environmental crises, the story of humanity’s place on the earth and its presence within geological time determines how we understand how we got here, where we might like to be headed, and what we need to do” (763–764). While in this article I offer no solutions to the impasse I describe, I nonetheless invite readers to rethink “the stories we tell ourselves” about climate change, higher education, and our horizons of hope. I begin by offering a summary of decolonial critiques and then reviewing their diagnosis of colonialism as the primary cause of climate change. Next, I consider the implications of this diagnosis for higher education, specifically in settler colonial contexts. Then, without assuming that existing colleges and universities can or should be made “sustainable,” I offer a framework for approaching higher education as a space for learning how to disinvest from a harmful habit-of-being. Finally, in the conclusion, I offer a tool for analyzing the extent to which responses to climate change in higher education address three orienting denials that characterize this habit-of-being: denial of colonial violence, denial of ecological unsustainability, and denial of our condition of entanglement.

Decolonial Critiques of Modernity

There is no single definition or lineage of decolonial thought, but it can be traced to several distinct but overlapping genealogies of postcolonial, anticolonial, Indigenous, Black, and abolitionist studies and social movements. Decolonial critiques understand coloniality as modernity’s constitutive underside and thus identify the initiation of Black enslavement and Indigenous colonization in the fifteenth century as modernity’s epistemological and ontological genesis. Colonialism has taken the form of *external colonialism*, in which colonists extract resources and labor to export back to the metropole, and *settler colonialism*, in which colonists come not only to extract resources and labor but also to stay (Tuck et al.). However, as Lowe suggests, coloniality is not an event or even an era, but rather a set of categorical divisions, extractive relations, and ontological configurations that “governs and calibrates being and society in an ongoing way” (92–93). Thus, although its specific formations have been contested and shifted over time and place, a colonial ordering of the world endures and remains the price of modern existence.

Here, I synthesize critiques that identify the various architectures of being that are naturalized within modernity (Stein et al.). The modern-colonial habit-of-being rests first and foremost on a foundational separation of humans from each other and from the rest of nature (other-than-human beings) and holds out the promise of unrestricted autonomy and independence (Alexander; McVittie et al.; Ferreira da Silva). In this configuration of being, responsibility to and relationality with other beings are purely matters of choice and rational calculations of utility maximization. Separation also lays the groundwork for various modern-colonial systems characterized by racialized and anthropocentric hierarchies. This includes a knowledge system that is organized by universal reason, which offers the promise of epistemic authority, certainty, and predictability – that is, the idea that to know the world is to have the ability and the right to control it (Ahenakew; Santos). It also includes a political system organized by nation-states, which offers the promise of order, security, private property, and shared identity (Arvin et al.; Byrd). There is also an economic system organized by global capitalism that promises endless economic growth and accumulation without consequence (Coulthard). And, finally there is a hierarchical social system that promises socio-economic status as a reward for hard work (Donald).

From a decolonial perspective, these modern promises are largely enabled by disavowed colonial processes that are externalized, invisibilized, and denied by those who are deeply invested in the modern habit-of-being. I summarize the relationship between different modern promises and the related colonial processes in Table 1.

According to this analysis, modern promises can only be fulfilled within a colonial ordering of the world premised on separation and hierarchy, through which the dominance of a particular subset of humanity is secured at the expense of all other humans and the environment itself. In other words, modernity's emergence and maintenance is subsidized through ongoing genocide and ecocide. The implication for climate change is that the modern-colonial habit-of-being is not only inherently harmful but also inherently unsustainable. This, in turn, makes the premise of sustainability both a practical impossibility and an ethically compromised horizon of hope. However, because it is so difficult to interrupt investments in this habit-of-being, the limits of mainstream sustainability efforts are generally unacknowledged.

Table 1: Modern Promises and the Colonial Processes That Subsidize Them.

	Modern promise	Colonial process
Global capitalist economic system	Continuous growth without consequence; fulfilment through wealth accumulation (<i>accumulation</i>)	Racialized expropriation and exploitation of humans beings and other than-human-beings
Nation-state political system	Security through protection of property; cohesion through shared national identity (<i>security</i>)	Sanctioned violence in the form of policing borders and ‘othered’ people, and global militarism
Universal (Eurocentric) knowledge system	A single, universally-relevant rationality and set of values that offer certainty, predictability, and consensus (<i>certainty</i>)	Denial of the gifts of other knowledge systems; treating knowledge as a means to index, control, and order the world and define existence
Hierarchical social system	Socio-economic status and upward mobility as earned reward for hard work and ‘natural ability’ (i.e., ‘merit’) (<i>mobility</i>)	Worthiness is conditional and determined by a person’s/being’s perceived capacity to produce value within modern economies
Foundation of separation	Total independence and autonomy of (certain) humans; relationality and responsibility are optional and based on choice and free will (<i>autonomy</i>)	Denial of interdependence and responsibilities (before will) to each other and a wider ecological metabolism; objectification and instrumentalization of other beings

Decolonial Critiques of Climate Change

Decolonial analyses are marginalized within mainstream conversations on climate change and barely register within climate change education, as is the case with critical and transformative perspectives more broadly (Busch et al.; Tuck et al.). However, there is a growing body of scholarship that provincializes mainstream, Eurocentric narratives about climate change and makes visible differently distributed vulnerabilities to it (Baskin; Davis and Todd; Gomez-Barris; Karrera; Singh; Whyte, “Indigeneity”, “Indigenous Climate”). While these engagements vary depending on their context and intention, broadly speaking they frame the modern-colonial system itself as the underlying root cause of climate change. Thus, within these analyses, as Whyte argues, “It is not a given that today’s social-ecological systems are ones that are important to conserve” (“Indigeneity” 299). In other words, from a decolonial perspective, the very idea of sustainability is sus-

pect, and it therefore becomes necessary to ask: What are we trying to sustain, and why?

Table 2: Three Primary Denials and Four Levels of Denial.

	Violence	Unsustainability	Entanglement
Deep denial (refusal to engage the critique)	No recognition of colonial violence	No recognition of climate change	No recognition of entanglement
Interpretive denial (selective acceptance of the critique)	Colonial violence is a product of exclusion from opportunities and institutions, and should be addressed through inclusion and access	Climate change is a product of inefficiency and waste, and should be addressed through technological innovations, renewable energy, and shifts in individual behaviors	Relationality and responsibility are established through individual will and generally based on chosen (social, familial, political) associations
Implicative denial (acceptance of the critique, but not the full implications)	Colonial violence is a product of the existing system, and should be addressed through systemic changes: redistributing resources, centering marginalized voices	Climate change is a product of corporate greed and political corruption, and should be addressed through collective public action and mass movements to create green energy/jobs/policies	Relationality and responsibility operate in structures that exceed individual choices and should be therefore addressed with regard to the relevant power relations and subsequent obligations
No denial (full acceptance of the critique and its implications)	Colonial violence is the condition of possibility for the existing system; while changes to the system in the short term can reduce harm, in the long term harm will not cease until the system itself is either dis-mantled or falls on its own	Climate change is a product of the economic and ecological logics of the existing extractive system, and while green energy/jobs may be important for mitigation, we will ultimately need to surrender this way of life and enact another mode of existence	Relationality and responsibility operate at many layers, including an existential layer that is un-conditional, and a political layer that recognizes systemic violence and tries to mitigate harm (in the short term) and unravel the system to ensure collective well-being (in the long term)

Davis and Todd argue that colonialism amounts to “a severing of relations between humans and the soil, between plants and animals, between minerals and our bones” (770). It is because of these severed relations that decolonial critiques emphasize coloniality as the underlying cause of climate change. The foundational modern-colonial separation of human beings from “nature”/“the environment,” and the presumed superiority and authority of the former over the latter, allowed for the objectification of the latter into property (i.e., land and “resources”), and the subsequent extraction and appropriation of that “property” for profit. Identifying non-European people with the denigrated category of “nature,” in part because they did not generally treat “nature” in this extractive way, provided further rationalization for the colonial-capitalist exploitation and expropriation of people and the earth itself (Ferreira da Silva). This premise of separability amounted not only to a denial of responsibility to other beings, but also a denial of humans’ metabolic entanglement with the earth itself.

In order to make the colonial roots of climate change more visible, critical scholars challenge dominant discourses, such as descriptions of the present era as “the Anthropocene.” This term was coined to describe the current geological epoch in which “humanity” has been the primary force of global environmental change (Lewis and Maslin; Rousell). The concept has spread across disciplines and even into popular culture. However, it has also come under critique for suggesting “humanity” as a whole has caused the climate to change (Davis and Todd; Di Chiro; Karera). These critiques argue that in fact, climate change was largely caused by a specific, largely White and wealthy *subset* of humanity that externalized the costs of its particular way of life and development onto other humans and other-than-human beings. As Gomez-Barris notes, “Humanity is not universally implicated in the demise of our planet’s non-renewable resources, the diminishing of its biodiversity, or the history of capitalism’s destruction of communal interdependence.” The irony here is that while the colonial West has long excluded racialized and Indigenous people from the category of “the human” (Wynter and McKittrick), within the mainstream framing of the Anthropocene it mobilizes a universal figure of humanity to erase differential responsibility for ecological crisis. Thus, it is crucial to name “the problem of colonialism as responsible for contemporary environmental crisis” (Davis and Todd 763).

In a complementary intervention, Whyte notes that “Indigenous climate change studies” diagnose the origins of today’s climate crisis thusly: “The colonial invasion that began centuries ago caused anthropogenic environmental changes that rapidly disrupted many Indigenous peoples, including deforestation, pollution, modification of hydrological cycles, and the amplification of soil-use and terraforming for particular types of farming, grazing, transportation, and residential, commercial and government infrastructure” (“Indigenous Climate” 154). In

other words, “vulnerability to climate change [is] an intensification [of] colonialism” (156), rather than a new development.

Meanwhile, the fact “[t]hat colonizers today [. . .] are concerned about climate change, suggests that they are now being affected by the seismic waves of massive ecosystem transformation that began over 500 years ago” (159). Indeed, it is increasingly difficult to externalize the true costs of modernity’s promises. These costs are made evident not only through intensifying climate disasters but also increasing economic insecurity and political instability. In this context, those who have gained the most – at least materially – from the colonial processes that both enabled the emergence of modern existence and initiated climate change itself can no longer sequester themselves from the effects of these processes, even as they generally remain the least or last directly affected.² Yet, because the colonial processes that have subsidized these promises have been largely disavowed, current instabilities appear to be the result of external causes. Thus, many people look to existing systems and institutions for solutions: market-based solutions from global capital (e.g., carbon trading); policy solutions from the nation-state (e.g., The Green New Deal; or alternatively, demands made upon the nation-state by groups such as Extinction Rebellion); and scientific and technological solutions from the “universal” Enlightenment knowledge tradition (e.g., carbon sequestration).

While some of these efforts might mitigate or slow the impact of climate change, ultimately it is unlikely that the system that produced climate change has the necessary tools to halt or reverse it. Further, this new sense of urgency can lead to more harm if driven by a desire to sustain the status quo – it might simply repeat previous patterns through which colonial violence has been justified and rationalized under the banners of progress and benevolence. Whyte therefore concludes that until colonial violence is addressed as the underlying cause of climate change, any effort to halt or mitigate climate change will also tend to reproduce colonial processes and relations.

2 None of this is to say that the activities of colonized or formally colonized peoples have no impact on the climate. However, the disproportionate impact of the most powerful and wealthy countries, and the wealthiest subsets of those countries, cannot be denied. Furthermore, the hegemony of a global economic system premised on continuous growth and extraction was largely imposed on much of the world through processes of colonial rule and post-colonial hegemony. For instance, the post-World War II discourse of international development, largely directed by the West and implemented by local national elites, led many post-independence countries to follow the model of Western economic development, which resulted in significant acceleration of industrialization and its climate effects (Wynter and McKittrick).

Several implications follow from these analyses: (1) Populations that have been subject to European colonial rule, enslavement, and indirect forms of subjugation – that is, those on whose lands and backs modernity was built – have been experiencing the effects of “climate change” since the fifteenth century, and those same populations are the most vulnerable to new climate crises; (2) Those socialized into a modern-colonial habit-of-being generally deny coloniality as the root cause of climate change, given that to address these root causes would require questioning the conditions that enable their way of life – something few are willing to do; (3) It is only a matter of time before climate change catches up with those inhabiting the modern-colonial habit-of-being, even as they have the greatest buffer from it; and (4) If we continue to use the same tools, strategies, analyses, and relationships that created this habit-of-being to address the crises it created, this will likely lead to further colonial (racial and ecological) violence.

In sum, as Gomez-Barris argues, “shifting how we imagine the root cause of climate change matters for how we narrate impending planetary crisis.” By diagnosing the interrelated colonial structures of genocide and ecocide as the root causes of climate change, decolonial critiques offer a serious challenge not only to outright climate change deniers, or to those who admit that climate change exists but seek to address it solely through reforms focused on technological fixes and improved efficiencies (Baskin), but also even some more radical advocates who seek systemic change but nonetheless fail to reckon with coloniality and their complicity in it (Brulle and Norgaard). These insights also suggest that most of us are highly unprepared to face a potential future in which we will have no choice but to learn to know, be, and relate otherwise.

In the next section, I consider what this might mean for higher education, and why it is so difficult for many of us within institutions of higher education to consider the possible end of the only way of life that we have ever known.

The Coloniality of Modern Higher Education

While it is commonly believed that higher education institutions are crucial sites of response to climate change (Henderson et al.; Jurdi-Hage et al.), what generally goes unasked is how these institutions might have helped to *create* climate change in the first place and the implications that follow, which is what I address in this section. Colleges and universities are central actors in the reproduction of society, and while most seek a relative degree of autonomy, all are deeply embedded in their political and economic contexts. Particularly in settler colonial countries such as the United States, Canada, and Australia, institutions of higher edu-

cation have served as primary sites through which modern promises are both cultivated and fulfilled. Thus, these institutions have both benefitted from and contributed to the reproduction of the colonial processes that decolonial analyses identify as the primary causes of climate change. This severely limits their ability to serve as sites for learning to disinvest from modern promises.

As Stanley notes, colleges in the early settler colonial context of Canada “re-made the cultural landscape of the territory [on which they sit], imposing their disciplinary practices and ways of knowing on the territory and its inhabitants, effectively steamrolling the systems of cultural representations and the meanings already in place” (143–144), not to mention the political and economic systems that were rooted in those places. This included, of course, the attempted eradication of Indigenous forms of (higher) education that had existed on now-colonized lands for thousands of years (Stein, “Beyond Higher Education”; Stonechild). Beyond the immediate lands they occupy, the education and research that higher education institutions in settler colonial contexts contribute to the reproduction of these systems on a wider scale, socializing citizens for the political system of the colonial nation-state, preparing laborers and investors for the capitalist economic system, disseminating a largely Eurocentric knowledge system, and naturalizing the notion of human supremacy and authority over other living beings, and White supremacy over Indigenous, Black, and other racialized peoples (Ahenakew; Daigle; Grande; Hampton; Marker; Smith; Stein, “Colonial History”, “Confronting Foundations”). If we overlook the role of higher education in not only preparing people to be engaged and invested in the social, political, and economic reproduction of the modern-colonial habit-of-being, but also as a primary site in which its promises are fulfilled, we will severely underestimate the difficulty, if not the impossibility, of transforming these institutions into sites for addressing climate change.

Addressing the colonial foundations of higher education and thus addressing the roots of climate change as they relate to higher education, is particularly difficult in an era in which higher education is perceived to be in crisis and thus in a vulnerable position requiring defense. After all, higher education is largely viewed as a site in which modern promises (in particular, social mobility) can be fairly and efficiently distributed – a role that paradoxically becomes more cemented in a context in which available opportunities are increasingly scarce (Wyly and Dhillon). This move to valorize the university can forestall deeper critique as it “repeats the forgetting of the dispossession at the university’s origins while simultaneously drumming up a sense of crisis regarding the potential consequences of its downfall” (Boggs and Mitchell 441).

Many people feel disillusioned as promises that were previously more accessible are increasingly uncertain and difficult to fulfill, and there is more competi-

tion for fewer secure socioeconomic positions. In this context, some cling even more tightly to these promises, and to the institutions that pledge to fulfill them. This includes higher education, given that, as Boggs and Mitchell note, “the university increasingly assumes the social function of embodying, enabling, and managing social insecurities of various forms” (440). This can make challenging the benevolence of those institutions, and their ability to adequately address these crises, all the more difficult. If, as Brown suggests, we are living in an epoch characterized by “civilizational despair” (222), then many (Brown included) will seek to counter this despair by reclaiming their “conviction about the human capacity to craft and steer its existence or even to secure its future” (221). Higher education, through both its promises of “infinite opportunity and upward mobility” (Wyly and Dhillon 135), as well as its promise that the knowledge produced within its walls will enable us to solve these crises, becomes a prime site at which the ability to craft a future in alignment with existing desires is asserted.

Higher education’s function as a site in which colonial hope is rearticulated and reanimated includes its role as a site for social and technological innovations that are meant to ensure the continuity of the modern-colonial habit-of-being. Even when there is tacit acknowledgement of the role of modern (especially technological) knowledge in creating climate change, this knowledge is nonetheless framed as offering the most viable solution for solving climate change (Baskin). Indeed, prevailing approaches to social change in higher education risk reproducing instrumental and ethnocentric imaginaries of justice, responsibility, and change (Whyte, “Indigeneity”; Wynter and McKittrick). These imaginaries tend to: maintain the uneven distribution of social power and limit the available possibilities for ethical relationships (Donald); deny marginalized communities the resources and opportunities to create and lead their own visions of social development and transformation (Spivak); and reproduce existing knowledge hierarchies that favor Western science and technology (Ahenakew; Santos; Smith). The collective result of these patterns is to diminish the value of other knowledge traditions, social capabilities, and ecologies, and to overlook the unevenly shared benefits and harms of existing systems and transformations.

However, a story that funnels this sense of “civilizational despair” back into desires for the same modern promises (of autonomy, accumulation, security, certainty, and hierarchy) is not the only story we can tell about climate change and the role of higher education in it. If we instead approach climate change and other interrelated crises from the perspective of decolonial critiques, we get a very different story. If we, as Karera suggests, allow “the afterlives of slavery and colonialism on the rise to inform us on how to face the Anthropocene” (52), then rather than frame modern promises as broken but viable and fixable, we might consider that they were always false and harmful: they could never be fulfilled

for most people, and to the extent that they could be, it came at significant cost to other people and other-than-human beings. These costs have thus far been largely externalized to those deemed not to matter, and have only recently started to sharply impact those who they previously benefited. In other words, we can come to see these promises as ultimately unfixable. From this perspective, perhaps the growing sense of “civilizational despair” is not something to be suppressed or appeased, but rather something to be faced head-on, and even cautiously welcomed.

If we seek to address the full extent of the climate and other challenges we face, we may need to invite people to move from a sense of disillusionment with the promises offered by modern institutions (including higher education), toward disenchantment with those promises, and ultimately, disinvestment from them. In this rendering, disinvesting is not the same as divesting (Agathangelou et al.); it does not entail removing oneself from a situation by searching for some place that is *not* compromised, but rather facing the fact that complexity and complicity is the “constitutive situation of our lives” (Shotwell 8), and asking how this came to be. It would mean recognizing that those of us who invested in and benefited from modern promises, and thus from the colonial violences that made them possible, have incurred a debt that we can likely never repay, and produced harms that we can likely never heal – while also recognizing that we have no choice but to try anyway. This work cannot begin, however, if we remain invested in these promises, or if we are motivated by the search for redemption rather than by a sense of responsibility, well-being, and interdependence.

Disinvesting also does not mean that we should not work to make life more livable in existing institutions, and in the larger system, for as long as they stand. However, it means not continuing to invest our hopes in their futurity, and learning from their mistakes so that we might not repeat them as we look toward new possibilities. Finally, if we are to remain conscious of “the scenes of violence that characterize the underbelly of normative projects” (Karera 49), then this work will require that we develop the stamina, maturity, and humility to sit with the collective mess we are facing, without turning our backs on it and looking for an easy exit or prefabricated alternative in the midst of uncertainty. There is likely no effective or ethical way to compel people to do this work within existing institutions. However, if we do not commit to this work (and perhaps even if we do), we may continue to naively expect that the same habit-of-being that created the problems we now face will be able to solve them.

Higher Education for the End of the World as We Know It

Some decolonial critiques frame decolonization as entailing nothing less than “the end of the world as we know it” (Ferreira da Silva), that is, *the end of the modern-colonial habit-of-being*, given that it was precisely by forcibly ending other worlds that this world was made possible. Interestingly, this framing is also mobilized by the Dark Mountain Project, a cultural movement about climate collapse: “The end of the world as we know it is not the end of the world, full stop. Together, we will find the *hope beyond hope*, the paths which lead to the unknown world ahead of us” (cited in Hine, emphasis added). On the one hand, these statements come from distinct and incommensurable genealogies of critique. After all, it is quite different for those for whom “the world” was made to welcome its end than for those on whose backs and lands the world was made to do so. However, the echoes in these statements suggest both the generative potential of bringing together conversations about decolonization and climate change, as well as the importance of doing so without flattening the histories that have brought us here.

For those who have been socialized within a modern-colonial habit-of-being, the promises that animated the past no longer seem to apply to the present, while the future also appears deeply uncertain. This often provokes anxiety, because there is no clear picture of what will ultimately emerge in place of the old, nor any guarantee that it will be better than what we currently have. Yet the present also offers an important if ambivalent opportunity for learning and unlearning. In this section, I consider how those of us currently inhabiting higher education institutions might support the work of “hospicing” a habit-of-being and our attachments to it, and develop the stamina that will be required in order to welcome a radically uncertain future.

Inspired by Bauman’s suggestion that we think of higher education in the post-modern era as “preparation for life” (Bauman), I briefly outline educational engagements with intellectual, affective, and relational dimensions of change as a gesture toward a much larger and longer conversation about how higher education might serve as a space in which we prepare for the end of the world as we know it, which incidentally would also be the end of higher education as we know it (Stein, “Beyond Higher Education”). While it is unlikely that these kinds of engagements could ever become central to the mainstream orientation of any existing higher education institution, they might find a place within the cracks and among those who have already become disillusioned with its promises. Indeed, ironically, the present era of economic rationalization, in which the traditional purposes of higher education have come under attack, may provide a dubi-

ous opportunity for treating the institution as a transitional site in which to prepare for an uncertain future (Rousell).

Intellectual Dimension

To face the potential end of a habit-of-being requires a dimension of intellectual engagement. In many ways, this is precisely what institutions of higher education are charged to do. However, rather than only rely on mainstream approaches to diagnosing and solving problems within various disciplines, it is important to also consider how these very strategies have also contributed to our current challenges and how they might therefore be limited in resolving them (Wynter and McKittrick). If we fail to do so, then we will fail to learn the lessons that modernity has to teach, and we risk reproducing more of the same, even if we want to make something different. This means learning from modernity's mistakes, as well as its gifts, by asking ourselves what we should take with us, and what should be left behind (Bendell).

Another element of intellectual preparation is learning to identify the limits of modernity's universalizing impulses. As Shiva notes: "Dominant scientific knowledge thus breeds a monoculture of the mind by making space for local alternatives disappear, very much like monocultures of introduced plant varieties leading to the displacement and destruction of local diversity" (4). Within this monoculture of thought, non-Western knowledges are generally not legible and may even be deemed non-existent; conversely, efforts to make them legible often involve removing them from their context in order to import them into Western frames of reference (Ahenakew). In contrast, we might consider the necessity (while also acknowledging the difficulty) of Santos's proposal for an "ecology of knowledges" in which all knowledges are recognized as both insufficient and indispensable. Rather than either universal relevance or absolute relativism, the idea is to learn to appreciate contextual relevance, as well as to understand limitations. The notion of contextual relevance also challenges the modern epistemic desire to create a singular catalogue of the world and determine the causality of all things in order to predict and control them (Ferreira da Silva). This desire has led to dividing the world into that which is known or not-yet-known, resulting in an accumulative approach to knowledge. This denies the complexity of ourselves and the world in order to fit things into neat boxes, and then denies what does not "fit"; it also leads to a search for simple solutions, and a refusal to consider that some things are simply unknowable. This may partially explain some of the anxiety people feel when facing a deeply uncertain future. Thus, in the current context, what is needed is not just

acquiring more knowledge or skills, but also developing learners' negative capabilities.

Negative capabilities are conceptualized in relation to positive capabilities (skills, knowledge, competencies). Although both are important, French et al. suggest negative capabilities prepare one to "be oriented towards the unknown, creative insight of the moment and hence towards 'the edges' of their ignorance" (202). This may create important opportunities to face the limits of our individual and collective imaginaries, and to confront the difficulty of imagining otherwise without projecting onto the future and thus reproducing more of the same. Negative capabilities could also engender a sense of humility that might enable experiments with alternatives that are conscious of the potential for mistakes and failure, and the opportunity to learn from them. In this sense, the intellectual work that is needed is not to produce predetermined, universal solutions that will provide guaranteed outcomes, but rather partial, provisional responses that will enable certain possibilities, and foreclose others, even as they will not necessarily "resolve" the overarching challenges we face.

Finally, negative capabilities might prepare learners to engage with different ways of knowing and being without reproducing patterns of relationship premised on hierarchies of epistemic value and consumption of difference (Ahenakew). From here, encountering difference would not be viewed as an accumulative opportunity for extraction but rather as a generative opportunity to situate our own perspective as just one of many that are possible, discern the contextual relevance and limitations of all knowledge systems, and foster new possibilities through relationships at the interfaces of these systems without enacting new hierarchies or sacrificing the internal integrity of each system (Santos). I address this further in the relational dimension.

Relational Dimension

Learning to live differently will require learning to relate not only to knowledge but also to people and other living beings very differently. The modern-colonial habit-of-being requires a deep denial of our interdependence, relationality, and responsibility to all beings (Donald; McVittie et al.). Try as we might to isolate ourselves from what we call "nature," all of us remain entangled with, dependent on, and indeed a part of it. This means that the violence we have done to nature, we have also done to ourselves. As well, what we have done to other humans we have also done to ourselves. To unlearn this separation requires disinvesting from forms of knowing and being that have been engendered by modernity and

convinced us that shared interests, ideas, or identities are the basis of relationships. Instead, we might create engagements where people can sense that our responsibilities to one another exist *before* will (Spivak), as a product of our shared existence with and on a finite planet. Un-numbing people to a sense of entanglement might in turn mobilize a sense of intrinsic worth, rather than the kinds of conditional and comparative worth that modern promises offer, which are premised on being not only separate from, but also superior to, other humans and other-than-human beings (Ferreira da Silva).

Some who have been subjugated by modernity have held onto other modes of existence, despite colonial efforts to repress or even eradicate them. Many of these ways of knowing and being hold important lessons about how to survive without relying on modern institutions, and how to relate in a very different way to the earth itself. Yet it is difficult if not impossible for those invested in modern promises to see these gifts, and to engage them in a way that is not immediately instrumentalized back into the maintenance of the modern-colonial habit-of-being. That is, engagements with difference often selectively extract from other epistemologies and ontologies in search of ways to hold on to modern securities, certainties and supremacies, without giving anything up (Ahenakew; Simpson; Whyte, “Indigenous Climate”). To avoid these patterns of engagement, we will need to denaturalize colonial patterns of relationship that have been premised on consumption in order to see the problems with these patterns, to understand why some are reluctant to share these gifts, and to understand why we should not feel entitled to access them. The imperative is to learn how to think and be alongside other ways of knowing and being without seeking to master, consume, or claim ownership over them.

Rethinking our learned approaches to relationality is not only about relearning to relate to other people differently, but also to the earth itself. Doing so is also a tricky task. People may seek to engage only in a contained way – for instance, through a neatly manicured garden. This can erase the complexity of life, and reduce nature to pleasurable moments of leisure, rather than experiencing it as a living system that contains both joy and pain, both colorful flowers and the compost from organic waste that feeds them. Conversely, efforts to engage with “the wilderness” risks reproducing colonial ideas of “lands that are mythically untouched by humans” (Whyte, “Indigeneity” 285); this erases longstanding interdependent Indigenous relationships to place, and reproduces colonial entitlements that in turn naturalize and disavow the violence that has been enacted to secure non-Indigenous access to those places (Tuck et al.).

Those socialized into the modern-colonial habit-of-being will have to figure out how to honor our interdependence with and responsibility to all living beings in ways that do not repeat these harmful patterns – including patterns of extrac-

tively consuming others' labors and knowledges for one's own agenda and enjoyment. Further, interdependence with and a sense of connectedness to all things means feeling both the good and the bad and seeing clearly our part in both. Indeed, no genuine relational shifts will be possible without taking responsibility for complicity in the violence done to other humans and other-than-human beings in the name of profit and progress. If these shifts are oriented by a desire for redemption (Shotwell), or a presumed entitlement to organize relationships on our own terms and secure continued access to "natural resources," it will only reproduce harmful patterns (La Paperson).

Affective Dimension

It is in the affective dimension that perhaps the most work is needed in order to address denial of the full extent of our complicity and the challenges we face, and yet it is rarely addressed in formal institutions of higher education. As noted earlier, in many cases people have access to all of the information that would be required to consider the distinct possibility that both the modern-colonial habit-of-being and the institutions that uphold it are not, cannot, and should not be sustainable. However, they remain in denial about the full implications (Bendell; Brulle and Norgaard; Foster; Spratt and Dunlop). This is, in part, because we are not only dealing with investments in a material economy, but an affective economy as well. In particular, the affective economy operates through the mobilization of desires for the fulfilment of modern promises, which are made possible because of colonial processes. These promises include: autonomy (through separability), certainty (through universal knowledge), security (through nation-states), accumulation (through capitalism), and mobility (through social hierarchy).

These promises are not easily given up, and fragilities may be activated when these promises are perceived to be under threat (DiAngelo). Even without consideration of our complicity in violence, facing the inherent unsustainability of our modern-colonial institutions and habit-of-being can be emotionally overwhelming (Clayton et al.), particularly when there are no ready-made alternatives. As a result, people may calibrate their responses to climate challenges in ways that maintain hope that those promises can be restored and fulfilled, even if intellectually they have concluded otherwise (Foster). It is difficult to disinvest from the modern-colonial habit-of-being and its attendant promises, particularly given that for many people it is the only way of life we have ever known. Furthermore,

many are wary of feeling hopeless in a moment already characterized by uncertainty, insecurity, and instability.

Instead of seeking to appease or resolve these feelings or fulfil desires for hope in the continuity of modern existence, we can consider the generative potential of despair. In this way, Brown's lament that the "loss of conviction about the human capacity to craft and steer its existence or even to secure its future is the most profound and devastating sense in which modernity is 'over'" (221) might be rather precise. Instead of concluding that this "loss of conviction" is something to be avoided, we might consider how colonial violence has itself been rationalized by the imperative to "master" or order human existence (Ferreira da Silva; Wynter and McKittrick). This, in turn, suggests the need for spaces in which we can mourn the loss of this conviction and face modernity's decline so that something new might emerge from its refuse. This is affective labor because it demands of us that we work through often unconscious or disavowed desires and investments, rather than only shifting conscious intellectual commitments.

In other words, what is needed in response to the strong affective pull for hope in the continuity of our existing system is not to ask or demand that learners "put their emotions aside" in order to "focus on the facts," but quite the opposite: to invite them to be honest about what those emotions are and where they are coming from (Taylor). This work requires critical empathy for ourselves and others, so that we can face the full spectrum of humanity's capacity for horrible and amazing things, instead of searching for an unattainable promise of perfection, progress, or purity (Shotwell; Todd). This includes admitting to the satisfactions and pleasures that have been derived from modern promises – and thus, from colonial violences. If we cannot be honest about our enduring investments in a harmful and unsustainable habit-of-being, and about the difficulty of disinvesting from it, then we may continue to assert that we want a different future while our actual desires remain unchanged. Instances where our *intellectual agreement* with the need for substantive change is superseded by our *affective resistance* to change make evident that shifting habits of thinking do not necessarily lead to shifting habits-of-being. Attending to our affective responses in moments of crisis can help to clarify where our investments actually lie. It remains to be seen whether, as we reach the limits of the planet, people will be more willing to face the hard truths about the colonial conditions of our existence and our investments in it, or clinging ever tighter to the false modern promise that we can transcend those limits without giving anything up.

Conclusion: Beyond Sustainability

In contrast to higher education responses to climate change that are premised on sustaining modern-colonial existence, in this article I asked: What kind of higher education could prepare learners for the possibility of its end? It is challenging for people to consider that their way of life is not only the primary cause of impending crises, but that it has also been the cause of many preceding crises. The difficulty of addressing the colonial conditions of our existence extends to higher education institutions, even as they purport to be open to divergent perspectives. Yet if we consider that higher education is not only a product of the modern-colonial system, but also dependent on it for its reproduction, then the scope and scale of the challenges ahead become clear.

Thus, rather than offer a neat or prescriptive ending, I conclude by offering a tool for analyzing different responses to climate change in higher education (and beyond) in Table 2. This tool can help clarify the extent to which a response is addressing the denials that keep the modern-colonial habit-of-being in place, which can be summarized as: (1) denial of the systemic colonial violence that underwrites the maintenance of the dominant system (which is premised on racialized exploitation and expropriation); (2) denial of the inherent ecological unsustainability of the dominant system (which is premised on unending growth and consumption that ignores the limits of the planet); and (3) denial of the condition of our entanglement (which is premised on framing relationality as a willed choice rather than a fact of our collective existence on a finite planet).

Because there are also different degrees of denial, I include four different levels of denial that are inspired by Foster, but which emphasize the extent to which a response takes seriously decolonial critiques of each of the three denials. This tool is not intended to be a means to dismiss efforts if they do not challenge all three denials at the fullest layer, especially given that it is practically impossible to deeply address all denials at the same time and remain legible (i.e., have one's proposal understood as possible or desirable). Rather, it is meant to make visible what is often invisibilized, so that we can interrupt these denials when they are reproduced (in ourselves and others) and be more cognizant of the contributions and limitations of any climate change intervention.

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3 The Need for a Black Feminist Climate Justice: A Case of Haunting Ecology and Eco-Deconstruction

Introduction

This essay makes the case for an approach to climate justice grounded in Black feminist thought. I outline one such approach by adopting the analytic and method of Black feminist hauntology. One of my aims is to depart from the erasure of Black womxn in climate discourse and strategy, as marked either by vulnerability, abjection, and the inevitability of dispossession and death, or by astounding “resilience” in the face of repeated devastation, violence, and abandonment (Baker; Sharpe, “Beasts of the Southern Wild”).¹ Although there is much to be done in terms of registering differential impacts or racist violence against Black womxn, I want to center (and make the case for centering) Black feminist thought as a crucial way to reimagine climate justice. In this aspiration, I am guided by Hortense Spillers’ self-described labor. In Spillers’ words:

I saw [. . .] black people being treated as a kind of raw material. That the history of black people was something you could use as a note of inspiration but it was never anything that had anything to do with you – you could never use it to explain something in theoretical terms [. . .] so my idea was to try to generate a discourse, or a vocabulary that would not just make it desirable, but would necessitate that black women be in the conversation (Spillers et al. 300).

In this respect I am informed by foundational work that has shown the impact of Black feminist thought for disciplines such as geography, geology, and philosophy (Jackson; McKittrick, *Demonic Grounds*; Yussuf; Weheliye). My focus and target, however, is that of climate justice, which is both a philosophically rich terrain and one that day by day reveals itself to be crushingly and immediately important for all.

Developing the ecological dimensions of Black feminist hauntology, I consider its implications for debates around the intergenerational nature of climate change,

¹ For example, the report “Essential Facts About the Victims of Hurricane Katrina” studies race(s) and poverty as variables that explain differential vulnerability, but not gender or sexuality. Intersectionality is increasingly being turned to as a framework to counter this problem, but it risks being untethered from its roots in Black feminism and thus its focus on Black women. See Animashaun Ducre; Kaijser and Kronsell; Tuana.

while foregrounding its vexed affinities with recent work in eco-deconstruction that treats the hauntological dimensions of climate change and justice. I make my case here by responding to Matthias Fritsch's argument in *Taking Turns with the Earth*, that overcoming the assumptions that tend to limit philosophical and policy approaches to climate ethics and justice requires a "reconceptualization of humans as generational-terrestrial beings, as well as of intergenerational relations themselves" (6). My argument is (1) that addressing the problematic assumptions of climate justice requires countering the widespread erasure of Black womxn and of Black and decolonial feminist concerns and interests, within eco-deconstruction as well as climate ethics and justice more generally, and (2) that Black feminist hauntological thought harbors important tools and insights for these tasks, such that it offers the basis for a transformative vision of climate justice that is always already transgenerational and ecological.² In my account, Black feminist hauntology combines a profound rethinking of relations with the earth with a distinctive spectral ontology, and it does so by thinking from a specific positionality and history, namely, Black womxn in slavery and its afterlives.

This essay is not an exhaustive or conclusive account of Black feminist thinking on climate justice. I acknowledge the internal heterogeneity of Black feminist and womanist thought, as well as decolonial and Native feminisms that grapple with anti-Blackness, and the difference of emphases that mark each of them. Pulling from all of these, I adopt a narrow focus on what Viviane Saleh-Hanna calls "Black feminist hauntology," as analytic and method. The vision of Black feminist climate justice that I work toward here insists on the need to grapple with systemic violence and historic and collective accountability to weave futures that are not merely the repetition of the past, whilst foregrounding a distinctive set of ethical obligations and responsibilities that depart from the presentism and human exceptionalism of established framings of climate change. Attending to the distinct webs of ethical, political, and spiritual responsibilities and relations brings into view an otherwise occluded sense of what the harms and stakes of climate change, or the "anti-Black climate," are through a Black feminist hauntological lens (Sharpe, *In the Wake*). I suggest that the harm is less that of inequity, exclusion, or recognition. Rather, it is a matter of the disruption and incapacita-

² We might say that Black feminist hauntology is always already intergenerational. This claim risks, however, overlooking one of its distinctive contributions for rethinking climate justice. A Black feminist hauntology does not assume that generations are fundamentally discrete self-identical entities that are only subsequently conceived of in relation to other. Consequently, although relations between and among generations are key, it is more accurate to describe Black feminism as transgenerational.

tion of fulfilling one's responsibilities (of care, honor, celebration, mourning, remembrance, survival) to all the community. The demand might shift then, from greater representation or inclusion in whitestream climate negotiations and policy, to the capability to uphold responsibilities on our own terms.

Climate Justice and Eco-Deconstruction

A Ghost Story

The uncanny dynamics of haunting are manifest in global anthropogenic climate change. The forces set into play by the actions of the past and the present are unsated by arguments that evade culpability. The feigned innocence or ignorance of the presently living and future generations does nothing to alleviate the burden of inheritance and responsibility, and the grip of the ghosts that now stalk the earth. And yet, in much climate ethics and justice, debates have tended to revolve around such issues of ignorance, innocence, and non-identity, and to sidestep the asynchronous temporal structure of responsibility and entangled causality that we are experiencing (in profoundly uneven ways) as catastrophic climate change.³

The assumption of liberal political philosophy as the appropriate and natural framework to think intergenerational justice and climate ethics has led to the adoption of a model of an anthropocentric, individualistic, primarily "free" self as universal, and with it an essentially presentist or synchronous core theory of justice.⁴ If global anthropogenic climate change increasingly reveals the force of the dead, the past, nonhuman, and the virtual on the present and those presently liv-

³ Such as the nonidentity problem, problems of ignorance, lack of clear causal grounds to establish culpability, and denial of the ethical salience of the Earth (Cuomo 6–7). These problems and the assumptions undergirding them carry over into what Megan Blomfield argues are the three main categories of normative questions regarding climate justice, which "relate to the atmospheric target, mitigation, or unavoided impacts" (Blomfield 24). I gesture to some of the implications of a Black feminist hauntological climate justice for this latter category of questions in the final section. I follow Fritsch, however, in focusing on the model of social ontology and ethics that is assumed in the first cluster of ontological problems that pertain to the intergenerational nature of climate change.

⁴ "Theories of justice, right and political responsibility ought to reflect the importance to citizens, and to the nature and operation of their society, of transgenerational relationships. Liberal theories generally fail to do this [. . .] their approaches, concepts and principles are not adapted to deal with intergenerational issues" (Thompson, "Identity and Obligation" 26). There are obviously exceptions to this – for instance, in ecofeminist philosophy, Marxian political ecology, and

ing humans – this force, the animating force of the spectral as it disrupts seemingly natural categories of time, species, life, and ethics, is not in itself new. Rather, our time, Western capitalist modernity, owes its apparent newness and identity to its disavowal of the spectral, of ghosts, inheritance, and ways of “being-with-the-dead” (Ruin). It is to these disavowed and ancient matters that Derrida returns with the concept of hauntology.

Hauntology is for Derrida a response to the privileging of presence in the history of Western philosophy. This response requires taking seriously “this element that is neither living nor dead, present nor absent [. . .] It does not belong to ontology, to the discourse on the Being of beings, or to the essence of life or death. It requires [. . .] *hauntology*. We will take this category to be irreducible, and first of all to everything it makes possible: ontology, theology, positive or negative onto-theology” (*Specters of Marx* 63). Hauntology is at once metaphysical and profoundly ethical and political, or rather, as Derrida presents it here, it is the groundless ground of anything like ethics and politics. Hauntology makes it possible to think the asymmetrical relation of the other, or of self and identity as constituted through relations to others, dead, past, nonhuman, “not yet born,” through the gift and curse of inheritance, and responsibility to an always unpossessable past and future.⁵ This “infinite asymmetry” of hauntology is what leads Derrida to conceive of justice as excessive of the present moment and the currently living, and of calculation, right, law, and distribution (26). In contrast with the presentist, anthropocentric, individual subject presupposed in many theories of justice, hauntology contends that

it is necessary to speak *of the ghost*, indeed *to the ghost* and *with it*, from the moment that no ethics, no politics, whether revolutionary or not, seems possible and thinkable and *just* that does not recognize in its principle the respect for those others who are no longer or for those others who are not yet *there*, presently living, whether they are already dead or not yet born (xviii).

Hauntology is therefore an exploration of justice that is profoundly at odds with liberal political philosophy and capitalist social life.

in approaches to global and climate justice informed by the work of Iris Marion Young – yet they remain marginal to debates in philosophy and policy.

5 The terminology of “not yet born” is taken from Derrida and should not be confused with anti-abortion discourse of “the rights of the unborn to life” (*Specters of Marx* xviii).

Hauntology and Climate Justice

Initially, hauntology may seem far removed from the pressing matters of global urgency that are the domain of climate justice. Yet hauntology is promising since it helps us to understand the foundational limitations of hegemonic debates in climate justice and to begin to elaborate an alternative. In *Taking Turns with the Earth*, Matthias Fritsch has developed a number of these and systematically applied them to debates that focus on the intergenerational nature of climate ethics and justice. Fritsch's efforts deserve our attention here since they show the philosophical significance of hauntology for climate justice, and, at the same time, their lacunae and limitations are instructive and begin to indicate that something is missing. I show that what is in many respects an exemplary attempt to put eco-deconstruction to work with climate justice is haunted by Black womxn and by Black feminist thought. I pursue what this haunting makes possible and argue that it is an important example that supports the case for the necessity of a theory and practice of climate justice anchored in Black feminist thought.

Fritsch presents eco-deconstruction as an alternative to the assumed social ontology and concept of justice that has tended to shape debates around climate change in philosophy and policy. He argues that the apparent novelty posed by climate change as an intergenerational and terrestrial ontological and ethical problem, its status as unique "moral storm," is due more to the "guiding assumption" that "a core or nonextensionist theory of justice would not (yet) have to treat generational relations" (Fritsch 3, 9).⁶ In respect to the perceived newness of the intergenerational aspect of climate justice, "at times," it is "presented on the assumption that before industrial modernity, ethics was more or less restricted to face-to-face relations that simply do not extend to future people" (3). Yet, as Fritsch rightly notes, "short-term thinking and disregard for noncontemporary generations" are arguably parochial and seem "germane to industrial, capitalist modernity, with its claim to draw ethical resources only from itself, rather than from inheritance" (3–4). Many of the problems in intergenerational and climate justice stem from this assumption, and thus the treating of intergenerational ontological and ethical relations as exceptional or as an addendum.

Instead of attempting to expand this "core theory of justice," we should, as Fritsch argues, turn to other models of ontology and ethics better equipped to

⁶ These fall into the categories of (1) the nonexistence challenge; (2) epistemic problems having to do with lack or poverty of knowledge about the future; (3) interaction problems; and (4) issues arising from world-constitution (Fritsch, *Taking Turns* 25). Fritsch's claim is not to decisively resolve all these problems but rather that ontological problems require an ontological approach. See Gardiner, *A Perfect Moral Storm*.

treat “intergenerational issues,” issues that “demand a reconsideration, both socio-ontological and normative, of the role of time in human life” (6). Fritsch generatively develops aspects of phenomenology and deconstruction to provide such a social ontology and two complementary models of justice that he calls asymmetrical reciprocity and taking turns. Both are grounded in (1) the critique of “possessive individualism” and Western political sovereignty, (2) a “spectral ontology,” or hauntology, and (3) a rethinking of time and ethics in ways that are oriented by (1) and (2). The alternative that I outline by turning to Black feminist hauntology both complements and seriously complicates Fritsch’s account. The hauntological relations that I identify in Black feminist thought and practice offer a “reconceptualization of humans as generational-terrestrial beings, as well as of intergenerational relations themselves” (6) that I argue can not only address and overcome many of the problems identified by Fritsch and others with climate justice but also show the importance of what haunts these critiques.

Justice, Haunted

In “Speculations on a Transformative Theory of Justice,” Denise Ferreira da Silva begins by connecting a global Black feminist and decolonial project with that of deconstruction.⁷ At issue in Ferreira da Silva’s critique of justice is the cleavage of form from matter or content, and with it, theory from practice. This cleavage has the implication that “most accounts of justice focus on its formal (abstract) nature, such as the characterizations of social justice as doomed precisely because its realization requires substantive social reforms and not only an extension of formal (legal) protection, as in the case of civil rights claims” (Ferreira da Silva). Following this initial assessment, Ferreira da Silva gives a critical survey of established paradigms of justice helpful for understanding some of the implications of Black feminist thought for what is currently understood as climate justice.

To begin, Ferreira da Silva rules out Rawlsian frames of distributive justice that reduce the social to the economic and confuse color-gender-blindness with neutrality. Similarly, while restorative justice and transitional justice seem to offer alternatives to the aforementioned juridical formalism, insofar as they re-

7 Using “The Force of Law,” as an opening, Ferreira da Silva writes: “If justice, conceived as a thing, does exist; if, as Jacques Derrida states, justice exceeds representation, if deconstruction is justice, a proposal for a transformative theory of justice makes no sense because that which can receive another form, a different form, that is, that which can be transformed must have content” (Ferreira da Silva, “Speculations”).

main focused on either persons or states, they are ill-equipped to grapple with global racial capital, and to redress forms of ongoing and systemic violence and injustice toward a subnational group or entity, where the injury is often perpetrated by their own state or at least state sanctioned (Ferdinand). And while, as Ferreira da Silva notes, feminist theorists of justice such as Iris Marion Young departed from distributive justice paradigms on the basis of the need to attend to “historical oppression and domination by a white heteropatriarchal state and social institutions,” she suggests that the proposed remedies “such as inclusion, recognition, and reparations” are incommensurate with the weight of raciality (Ferreira da Silva, “Speculations”).

The limitations of these models of justice are exposed when faced with a speculative question: “What would justice become if raciality entered its *formulation*? Would it yield a program for the realizing of justice [. . .] that does not rest on the obscuration of how the total value expropriated from slave labor and native lands exists now as global capital?” Understanding the profound implications of this question requires an excavation of the foundations and operation of sovereignty, law, and humanity in Western capitalist modernity. As Ferreira da Silva and Sylvia Wynter have both argued on the basis of their arche- and genealogic investigations of global raciality, justice, as it is currently exercised and understood, relies on the continual dispossession of “slave labor and native lands” (Ferreira Da Silva, *Toward a Global Idea*; Wynter, “1492”; “Unsettling”). The reality of this process and relation (as expropriation, captivity, and murder) is rendered opaque through the construction of race, or “raciality, the onto-epistemological toolbox” (Chakravartty and Ferreira da Silva 367). The toolbox of raciality opposes “*the transparent T*: Man, the subject, the ontological figure consolidated in post-Enlightenment European thought” to the racialized (Ferreira Da Silva, *Toward a Global Idea* xvi). It enables the fabrication of subjects who in fact can never properly be subjects in the terms of the dominant order of the human. Raciality forecloses full ethical and political salience to the racialized, and bars them from the supposedly fair and free exchange of wage labor and participation in the capitalist economy (Chakravartty and Ferreira da Silva 367–368). It underpins justice since it allows for the reconciliation of otherwise contradictory tensions (e.g., between the purported universality and equality of Western modernity and the constitutive exclusion of all its Others). The importance of the production of raciality is made invisible by the formalism of the “juridico-economic architecture” of justice and the seeming naturalness of hierarchical difference (Ferreira da Silva, “Speculations”).

Raciality

Within this global analysis of raciality, Blackness has served as the ultimate Other against which the self-transparent, atomistic, autarkic “subjects of universal reason” have been constructed (Ferreira Da Silva, “Toward a Black Feminist” 82). And, as Hartman argues in her response to C. B. Macpherson’s analysis of “possessive individualism,” the liberal subject and the key categories of liberal political philosophy were constituted through Black subjection and captivity (*Scenes of Subjection* 233). What is distinct about Blackness is the role that it has been made to serve as a way of organizing life and matter, into those considered free individuals, on the one hand, and on the other those beings and things considered raw matter that can be extracted, formed, traded, and possessed as exchangeable, interchangeable commodities without value (Warren; Yussof). This is “the afterlife of slavery.” We are haunted by the “racial calculus and political arithmetic” that continues to act as the “grammar” of our present (Hartman, *Lose Your Mother* 6; Spillers, “Mama’s Baby, Papa’s Maybe”) – such that the ontological, ethical, and political categories of agency and matter, personhood and animality, human and nonhuman, so foundational for theories of justice, are inextricably tied to a racial-colonial heteropatriarchal hierarchy crafted in genocide and slavery.

The construction of Blackness as “flesh” (that is, as the “zero point” of the New World Order of raciality) occurred through an “ungendering” of enslaved Africans and their descendants with the ends of foreclosing ethical relationality and tying their bodies and futurities to property (Spillers, “Mama’s Baby, Papa’s Maybe”; Wynter, “Afterword”). Ungendering does not mean that gender and sexual violence are inconsequential in the case of Blackness, but rather that these categories are co-constitutive.⁸ Enslaved womxn’s status as bestial, sentient, fungible commodities meant that their labors could be lawfully and rightly expropriated and that their children automatically became property (Hartman, “The Belly of the World”). In brief, the order and subject of capitalist Western modernity have at the heart the control and possession of Black womxn and their labors – always deemed “unproductive” in advance, and thus not warranting recognition as human or as requiring compensation. Attending to gender and sexuality in slavery and its afterlives is therefore essential for understanding the disavowed vampirism that Saleh-Hanna describes: “a parasitic Whiteness dependent on degraded conceptions of Black personhood through which forced Black labor

⁸ “The disregard of sexual violence does not divest slave women of gender but reveals the role of property relations – the possession of the enslaved – and racial subjugation in the constitution of gender and sexuality” (Hartman, *Scenes of Subjection* 100).

is imagined legitimate, legal and ethical” and thus the spectral, vampiric relations that constitute the world of global capital (9). The implications of this parasitic relation (and the essential role of racialized gendering and ungendering for it) extend beyond those bodies and spaces marked as Black, since “Whiteness, as such, relies on and literally feeds off anti-Blackness, without which it could not uphold the White power structures upon which European colonialism then and now is dependent” (9).

Black Feminist Hauntology

With Black feminist hauntology, Saleh-Hanna shows how Black feminist thought anticipates the central claim of *Specters of Marx*, that “No justice [. . .] seems possible or thinkable without the principle of some *responsibility*, beyond all living present, within that which disjoins the living present, before the ghosts of those who are not yet born or who are already dead” (Derrida xviii). It does so from an anchoring in Black and decolonial feminist grounds, that is, in a past that remains active and present, and oriented by a futurity that aspires to the interwoven projects of abolition and decolonization.⁹ Both projects involve haunting, and are twinned not only through overlapping geo-histories and climate vulnerabilities, but also through the shared work of defending and reanimating what has been cast as raw matter and dead land (Ferreira Da Silva, “Reading the Dead”; Tuck and Ree).

As we have seen, hauntology names the noncoincidence of the self, the present moment, and the living, but this broad ontological claim is always ethical and political, already irreducible from matters of justice. The political stakes and commitments of hauntology (that appear only in the margins of Fritsch’s account) are

9 By abolition, I mean the end of a world structured by anti-Blackness, and with it a global and general apparatus of captivity, possession, and property that has its roots in the Transatlantic Trade of enslaved Africans and their descendants. As we will see, misogynoir, “which describes the co-constitutive, anti-Black, and misogynistic racism directed at Black women” (Bailey 2), is at the core of anti-Blackness, and of white supremacy, such that the project of abolition is necessarily a Black feminist one. “The term is a combination of misogyny, ‘the hatred of women,’ and noir, which means ‘black’ but also carries film and media connotations” (2). By decolonization, I mean restoration of Indigenous lands and lives, and what some call sovereignty – itself necessarily a feminist enterprise with its own coordinates and commitments (Arvin et al.; Barker; Simpson; Tuck and Yang). Ferreira da Silva presents decolonization as “a call for the return of the total value extracted under total violence, which includes the very American (Indigenous) and African (enslaved) lives that were taken as well as the pasts, presents, and futures that were no longer because of their obliteration” (“Reading the Dead” 50).

foundational to Black feminist hauntology. Saleh-Hanna explains that “In Black Feminist Hauntology unfinished business is the result of oppression [. . .] ghosts remain because justice has not been achieved” (14). Ghosts proliferate and persist from untimely and ungrieved deaths. Bodies without burial or mourning ceremony, bodies without heads, without names, thrown overboard, into pits. Places, worlds, left only in ruins that we are taught to overlook. Haunting is a symptom of denied and erased violence that persists in the present unreconciled and unforgivable. Haunting is the index of a disjunct between norm and reality; it points to the supplement and remainder of the present reality. “Reading the dead” and communing with ghosts is revolutionary, messianic, and “utopian,” insofar as it calls us to attend to the present as it is shot through with the past, not as relic or nostalgia, but as repository of the virtual that might be activated through action undertaken in solidarity with the other potential worlds that our current (racial) capitalist realist reality has usurped and repressed (Ferreira Da Silva, “Reading the Dead”; Gordon, *Ghostly Matters*). As an “exorcizing framework,” Black feminist hauntology seeks to disinter the sources of ongoing and denied injustice, particularly those of anti-Blackness and colonialism. At the same time, it also operates as hospitality to the ghosts of the “kinds of violence, nationalist, racist, colonialist, sexist, or other kinds of exterminations, victims of the oppression of capitalist imperialism” (*Specters of Marx* xviii) that Derrida acknowledges.

It is by attending to ghosts and to haunting, to the invisible but persistent, to the erased and forgotten, the subjugated and the ancestral, to all those forces and beings denied by Modernity that return to haunt it, that we might locate and transform what otherwise appear to be eternal and necessary systems of violence and oppression. Here, Saleh-Hanna builds on Avery F. Gordon’s *Ghostly Matters*, particularly the analysis of Toni Morrison’s *Beloved* and what Gordon calls her theory of “rememory,” as well as the linkage of haunting to messianic and utopian justice, and the concept of the ghost as a “social figure,” where “investigating it can lead to that dense site where history and subjectivity make social life” (Gordon 8). In Black feminist hauntology, however, the “ghost I call upon is a Black feminist. She is the voices and the intellectual contributions of Black womxn who have known and seen that which has not been articulated or documented in White-ologies” (Saleh-Hanna 15). This qualification suggests a sense of Black feminism as always already intergenerational, comprised of the living, dead, not yet born, and past, present, and future, yet moored in a specific positionality and shared conditions of experience, one that adds complexity to the concepts of standpoint and identity politics central to Black feminist thought (Hill Collins). It also indicates how along with exorcism, and hospitality to ghosts, Black feminist hauntology aims at “shape-shifting” (Saleh-Hanna 15) that is a transformation of the community and subjects of justice from its current narrow confines – those

deemed fully human and living within racial capital and thus worthy of ethical and political salience – to futurities drawn by the projects of abolition and decolonization.

In sum, as it is theorized by Saleh-Hanna and explored by the other thinkers I engage with here, Black feminist hauntology is woven from two movements: (1) deconstructive critique or “decomposition,” through exorcism and hospitality to ghosts, and (2) shapeshifting or the transformation of systems of violence by what they have held captive or repressed.¹⁰ Both moments have as their goal what Denise Ferreira da Silva calls “transformative” global justice.¹¹ On the basis of the inability of justice to reckon with raciality, Ferreira da Silva calls for and speculates on a transformative, decolonial, Black feminist justice. Transformative justice would employ a Black feminist “Poethics” that aims “to produce a reading of the onto-epistemological grounds of the Category of Blackness” (“Toward a Black Feminist” 82). This reading does not rely on the categories foundational for modern scientific Western reason, but rather proceeds through their deconstruction or “decomposition” (“Speculations”). Although necessarily speculative, transformative justice can only manifest through practices that decompose global capital and as such rework the categories of value and of matter. In sum, “Such a transformative theory of justice envisions global justice as a radical material transformation, that is, the aftermath of decolonization or what the world will have become after it has been known anew.” This is the abolition or end of the current world through “poethics” or “wake work,” practices of memory and defense of the dead in a constellation with the living and the future.¹² It is abolition understood as the rebirth of a world in which Black womxn, and thus all people, can

10 On Denise Ferreira da Silva’s account, this practice involves three moments: “decomposition, composition, and recomposition – which are designed to identify and unravel the workings of separability, determinacy, and sequentiality” that are the conditions of modern thought (“Speculations”).

11 “A transformative theory of justice that attends to racial violence is a theory of global justice, as the global space is the juridic-economic context mapped by the tools of raciality” (“Speculations”).

12 “‘Defend the dead’ (Philip 26). What does it mean to defend the dead? To tend to the Black dead and dying: to tend to the Black person, to Black people, always living in the push toward our death? It means work. It is work: hard emotional, physical, and intellectual work that demands vigilant attendance to the needs of the dying, to ease their way, and also to the needs of the living” (Sharpe, *In the Wake* 10).

care for the dead, dying, and not yet born.¹³ As I go on to show, these means and ends are grounded in a distinctive Black feminist spectral ontology, or hauntology.

Why Climate Justice Cannot Sidestep Raciality

Let us return to *Taking Turns* through this Black feminist hauntological lens. Fritsch draws on Derrida's "critique of colonial, possessive subjectivity," in his reading of Robinson Crusoe as exemplary figure of liberalism that shares with modern democracy the model of sovereignty that "C. B. Macpherson [. . .] called 'possessive individualism'" (212). This reading gives essential context to the model of selfhood that Fritsch suggests is assumed by climate justice, such that modern liberal democracy can be seen as another side of "imperialist colonial sovereignty" that is fundamentally "carnivorous, sexist, individualistic, humanist, presentist, colonialist, and imperialist" (212).¹⁴ Although there is an earlier acknowledgment in the book of the need to "integrate histories of oppression, such as racism, colonial, sexist, and class oppression" (145), this brief mention principally serves to support Fritsch's claim that the models of justice he develops are stronger than those of ideal theory. While in his "response to critics" Fritsch does acknowledge settler colonialism and mentions slavery once, the latter almost disappears in parentheses in a discussion of primitive accumulation ("Responses to Critics" 564).

Modern Western sovereignty and humanism, liberal individualism, colonialism, capitalism, and global Anthropogenic climate change cannot fully be comprehended if the question of raciality is sidestepped. More precisely, Black feminist accounts show that reckoning with and from Blackness is necessary since Blackness is a "laboratory" for global modernity and "a means for organizing both human and nonhuman life" on a planetary scale (Glissant 74; Bennett 103). Black feminist thought is vital for any analysis (critical or otherwise) of the Anthropocene, and related optics of the Capitalocene and the Plantationocene (Dillon; Haraway; McKittrick, "Plantation Futures."; Sharpe, *In the Wake*). As Axelle Karera puts it, "If [. . .] 'Blackness [. . .] is the specter that haunts the Anthropocene and its possible futures,' it is imperative that we incisively revisit the conditions that make 'blackened' life and death unregistrable and therefore un-grievable". Other-

¹³ I am extending the claim in the Combahee River Collective Statement that "If black women were free, it would mean that everyone else would have to be free since our freedom would necessitate the destruction of all the systems of oppression" (Combahee, River Collective 33–34).

¹⁴ See especially the Second Session of *The Beast and the Sovereign II* (Derrida).

wise, Karera argues, political and ethical transformations many celebrate as ushered in by the “Anthropocene,” and by climate change, risk “a post-apocalyptic world without any signs of ethical transformation” (44). The black maternal is the “unthought” of the grammar or social ontology that Fritsch (following Derrida) haltingly begins to analyze. Black feminist hauntology is especially well-equipped to understand and depart from the problematic onto-ethic-political assumptions shaping hegemonic conceptions of climate justice. This is one crucial reason why I argue that no climate justice can be complete without it.

As Ferreira da Silva reminds us in her vision of transformative justice as always global and decolonial, Blackness and the project of Black feminism are always already bound up with global capital, (settler) colonialism, imperialism, postcolonies and postcolonial metropolises, the control and organization of labor, contemporary migrations, and ecological violence (“Reading the Dead”; Saleh-Hanna; Sharpe, *In the Wake*).¹⁵ In response to the charge leveled at so-called identity politics, of an exclusionary and restrictive focus on a particular identity (assumed to be given, stable, and obvious) over and against the universal (and thus any truly just justice), I reiterate the importance of haunting and the work of hosting. Black feminist hauntology is also haunted by forgotten relations and repressed pasts. Haunted, for instance, by the trans* in the Black maternal, by “the Native” as constructed by the heteropatriarchal apparatuses of the settler colonial state, without which neither the Master nor Slave can be properly understood, and by more-than-human relatives. The ethical and political work of hospitality to these ghosts and to erased, shared, complex histories that can never be fully known but nevertheless are constitutive of thought and life is demanded by Black feminist hauntology of itself. Attending to this inexhaustible dimension shows how rather than closing in on itself, a situated concern can be an opening onto

15 As Eve Tuck and C. Ree put it in their glossary of haunting: “Settler colonial relations are comprised by a triad, including a) the Indigenous inhabitant, present only because of her erasure; b) the chattel slave, whose body is property and murderable; and c) the inventive settler, whose memory becomes history, and whose ideology becomes reason” (642). Significantly, distinct yet imbricated racialized regimes of gender, sexuality, and the attempted destruction of kinship are essential to this triad, as are the issues of land, accumulation, and the status of “nature” (Lethabo King). Esme Murdock explains: “Blackness within the settler-colonial slave context was governed by an accumulative logic, whereas Indigenous peoples were and are governed within the settler-colonial context by an eliminative logic for the purposes of vacating/ occupying lands for expropriation [. . .]. Although the logics are contradictory, they work in tandem to both expand and cultivate land to produce and reproduce the settler state. Relatedly, women are targeted in each of these logics for their reproductive power to increase property, in the case of Black women, or to attack sovereignty and continuance, in the case of Indigenous women” (7–8).

the infinite, onto justice, without collapsing into false universalism or transcendence.¹⁶

Following Ferreira da Silva's example of challenging any established theory of justice to reckon with the question of raciality, I argue that any theory and practice of climate justice that aims not to repeat the violent contradictions of our present must reckon with this disavowed ground.¹⁷ Such a reckoning would not leave existing theories of justice intact. Just as "White disciplines of history, sociology, criminology, political science, biology" are "*in advance contaminated* [. . .] *pre-occupied, inhabited, haunted by its other*, chattel slavery and colonial genocide," we can also read climate justice as haunted and begin to welcome its ghosts (Saleh-Hanna 14).¹⁸ We must begin the work of welcoming these ghosts in an attempt to "exorcise" anti-Blackness from dominant modes of thinking, living, and governing.

Remembrance, Rememory, Community

I now turn to the features of Black feminist hauntology most relevant for the intergenerational and so-called ontological problems of climate justice and show that this critique of the "self-possessed" liberal individual and presentist model of justice is at the same time an opening onto a spectral ontology, or hauntology, that does not treat intergenerational and terrestrial relations as exceptions or puzzles, but rather as constitutive of self and sociality. I argue that this hauntology and the sense of transformative justice that emerges from it overcome the anthropocentrism, presentism, and capitalist and state-based framing of justice that currently limits central debates in philosophical and policy discussions of climate change, as well as the lack of sustained attention to anti-Black racism and heteropatriarchy in both.¹⁹

16 This is not to say that Black feminist thought should be the exhaustive or exclusive analytic in all matters, but to insist on its irreducible and distinctive importance, not least in debates around climate change and climate justice.

17 Around the time of copy edits of this article da Silva presented and published work that aligned closely with my argument and my anticipatory reading and elaboration of her work. See "Climate Change"; *Unpayable Debt*.

18 See Baldwin and Erickson; Tuana; Yussof; Malm and the Zetkin Collective for explorations of the importance of race (particularly whiteness) and racism for climate change.

19 See Meyer for a similar claim regarding the rejection of the state and liberal democracy in Black feminist ecological thought.

Remembrance and Rememory

The reproductive violence of slavery haunts us in many contemporary strategies that have systematically attempted to disrupt transgenerational memory, kinship practices, and the maintenance of Black autonomous senses of identity and personhood not defined by property and white supremacy. Forced sterilization and abortion, sexual and gender-based violence, adoption and family separation, incarceration, state and state-sanctioned killings, environmental racism, and forms of education and “opportunity” based on assimilation to and acceptance of a white supremacist, settler, capitalist project are arguably all more recent continuations of the targeting and attempted disruption of Black survival, kinship, transgenerational memory, and care. This context is one reason why, in Black feminist thought, transgenerational, hauntological relations are so important and tied to the work of aspiration, that is, of “keeping breath in the Black body” (Sharpe, *In the Wake* 109). It is from the specific constraints of reproduction and kinship, particularly reproductive (in)justice, and maternity, that Black feminist thought has constructed philosophically rich and distinctive approaches to intergenerational justice, history, and the “politics of memory” (Hartman, *Lose Your Mother*; “Venus in Two Acts.”; Ferreira da Silva, “Toward a Black Feminist”; Weinbaum).²⁰ Unrivaled in its grasp of the claim that “Inheritance is never a *given*, it is always a task” of the utmost importance to ethics and politics (Derrida, *Specters of Marx* 67), Black feminist thought is well equipped to grapple with our now shared inheritance, that of global anthropogenic climate change.

Kristie Dotson’s account of her own identity as a Black feminist philosopher gives an indication of how this context and positionality can lead both to a critical departure from an atomistic, individualistic model of the self, and opens onto an alternative better able to work through the “spotty freedom,” of interwoven histories of oppression. Dotson articulates important points for Black feminist hauntology. The first is a sense of personal identity and of the presently living, as always already communal and transgenerational: an account of the co-implication of the dead, the living, and the not yet born, and of the present shot through with the past and the future. In Dotson’s words: “*my memory is longer than my lifespan* [. . .] *My memory is co-constituted with theirs.*” Dotson is turned both to her ancestors, “people who did and did not survive lynchings and Jim Crow conditions,” and “people who loved me enough to survive,” while at the same time suggesting

²⁰ It is noteworthy that Walter Benjamin’s critique of bourgeois historical progress, messianic philosophy of history as oriented to the dead, and critique of justice conceived of as right and law is important for Hartman, Denise Ferreira da Silva, and Avery Gordon, as well as, of course, for Derrida.

that she is beholden as future ancestor to the not yet born to interpret and take responsibility for these inheritances and what haunts the present (192). Second, issues of historical violence, domination, and struggle are at the heart of the transgenerational relations of the gift (understood as indebtedness, care, and responsibility), not as subsequently added to them. Finally, in its attunement to the layered memories that constitute self and place, Black feminist thought is especially fit, as Dotson argues, to confront and work through complex political and ethical matters – matters that (as I go on to indicate through a reflection on oceans) are at once inter- and intra- generational, -mural, and, -species (192–193).

Consider how Morrison develops a concept and practice of *rememory* in *Be-loved*. Rememory is an active process that challenges conventional understandings of agency, selfhood, and temporality, with an emphasis on those persons and beings considered objects by history (“Rememory” 324). On Avery Gordon’s account: “Since for Morrison individual memory is congealed social memory (the way the commodity is congealed labor for Marx), she offers us a conception of a collectively animated worldly memory that is our shared sociality, our loving and deadly contacts” (*Ghostly Matters* 197–198). Morrison’s is a theory and practice of memory as material and as persisting and present beyond the human. She writes: “Occasionally the river floods these places. ‘Floods’ is the word they use, but in fact it is not flooding; it is remembering. Remembering where it used to be. All water has a perfect memory and is trying to get back to where it was” (“The Site of Memory” 243). We will return to water and the onto-ethical implications of its memory shortly. For now, it is important to note how Morrison’s description of rememory echoes those dimensions of Black feminist hauntology that Dotson outlines, and the ethical and political work that it calls us to.

Ways of Being with the Dead and Forms of Community

Rememory is one way in which Black feminist hauntology counters the pre- sentism, anthropocentrism, and atomization that characterize the social ontology and ethics of Western modernity. The systematic denial of the reality of the spectral and the moral and political salience of the dead may be most acute and obvious in the case of liberal political philosophy, but it is also evident on a foundational if sometimes uneasy level in the more critical projects of Western modernity, such as psychoanalysis, phenomenology, and Marxism (Derrida, *Specters of Marx*; Fritsch, *Taking Turns*; Gordon, *Ghostly Matters*; Ruin). In taking seriously the spectral and valuing “ways of being with the dead,” Black feminist hauntology is a clear refusal of and alternative to the social ontology and ethics that arguably underwrites Western modernity and with it dominant framings of climate ethics

and justice.²¹ I suggest that it also offers a way of answering the call for climate ethics that can reckon with interspecies grief, mourning, death and dying, and uncanny return of the past, but in such a way that it does not fall into facile and apolitical declarations of universality and psychologization of affect. Moreover, Black feminist hauntology avoids the problematic move that Fritsch cannot help but repeat in drawing on “references to non-Western accounts of selfhood and sociality” for some of the major conceptual contributions in *Taking Turns* (4), while relying on the highly mediated accounts of Derrida, Marcel Mauss, and Val Plumwood instead of engaging directly with contemporary Indigenous scholars and philosophers.²² This move (the one that a turn to Black feminist hauntology avoids) belies the view that any challenge or alternative to (White and Euro-descended) Western modern social ontology and ethics can only be found in a distant past and a radically exterior and Other culture that can only be known by disciplines such as anthropology. The dominance and supremacy of Western modernity is thereby retained even as it is critiqued, since the existence of alternatives within and to it in the living present are ignored and denied.

A Black feminist hauntology explores the force of the dead and the kind of political community that can emerge from the obligation of the living to them. Ruha Benjamin explains that “what is at stake in the idea that Black Afterlives Matter is the practice of making kin, not only beyond biological relatives, but also with the materially dead/spiritually alive ancestors in our midst” (47–48). She argues that ancestral “co-presence [. . .] troubles the line between the biological living and dead by calling forth spiritual practices of communication,” communication that may be called upon in the “fight against imperialist, white supremacist opponents” (47).

Saidiya Hartman’s statement “I, too, am the afterlife of slavery” suggests that she is haunted by transatlantic slavery’s ongoing violent legacy, by the inheritance of a “racial calculus and political arithmetic” that continues to situate Black womxn (in particular) as disposable things and possessions, as mere inhuman matter. Yet haunting is irreducible to trauma or victimhood (*Lose Your Mother* 6). Hartman’s claim can also be read as a refusal of the enforced forgetfulness required by narratives of historical progress, settler futurity, and the inevitability of capitalist white supremacy, and its moral imperatives of reconciliation, forgive-

21 I am indebted to Ruin for the concept of “ways of being with the dead” and its importance for continental philosophy in particular.

22 It is strange, given the innumerable global climate justice struggles of contemporary Indigenous nations and communities, and the sophisticated and rich treatments of climate justice and intergenerational justice that can be found in Indigenous and decolonial scholarship. See, for instance, Whyte.

ness, and sacrifice. This refusal works through a practice of embodied memory, and the welcoming of ancestral co-presence, kinship, and community. The past that is inherited is then both a yoke and a source of guidance (biological, ecological, cultural, and spiritual), survival, healing, and resistance.

The gulf that separates a Black feminist account of self and sociality from this kind of restricted model of ethical and political salience is deepened when we attend to another dimension of the Sacred in Afro-diasporic cosmologies and spiritual practices – that is, an understanding of the Earth as sacred and as the weave of the living and dead.²³ Here, the Earth and her forces are not separate from the ancestral or the quotidian practices of the living. These are “a way of placing the purpose of our existence back with its source, as a gesture of mutual exchange and as a way of giving thanks and asking to be sustained” (Alexander 307).

Joy James also stresses the co-implication of multiple generations and supposedly distinct times and places by highlighting the inheritance and adaptation of African cosmologies and the importance of the ancestral and spiritual to the radical political project of Black feminism.²⁴ James presents this “world view” as a critical departure from Western modern liberal models of selfhood and sociality. Through this lens, the self appears as a point on a dense tapestry woven through asymmetrical threads of reciprocity and thus responsibility. Here, “relationships are determinant and shape the pursuit and construction of transcendent community. Here the collective supersedes individualism” and challenges “restricted notions of communal democracy” (38, 40). The scope of community and of justice “includes the ancestors as well as the present collective and future not yet born children. All comprise community, including those otherwise considered socially dead, all those incarcerated, detained, held captive and not physically or presently present.”²⁵ We should pause here a moment to appreciate the profound dif-

23 Sylvia Wynter’s early essays connect the significance of ancestors, burial, and memory, in Afro-diasporic spiritual traditions to the Earth conceived as “universal, vital force,” and as site of intergenerational and collective memory (“Jonkunnu in Jamaica” 37). Significantly, Wynter argues that such relations with the Earth were integral to resistance and self-consciously undermine the conceptualization of Earth as property enforced by the plantation economy and liberal political philosophy (“Jonkunnu in Jamaica”, “Novel and History”; McKittrick, “Plantation Futures.”).

24 “This worldview posits the nonduality of time and space to belie socially constructed dichotomies between the sacred and secular and the spiritual and political, the individual and community” (James 37).

25 “The content and quality of communal relations is set by practice. (Consequently, a person’s ability to consider community as encompassing those who do not live in the ‘free’ world becomes in some ways a test of the limits of transcendence)” (James 38). See Gordon (“Some Thoughts” 12) for a sophisticated hauntological analysis of social death and incarceration.

ference of this abolitionist and spiritual view of community from the narrow rings of ethical and political salience, restricted for the most part to citizens of a nation, that are generally taken as the starting points of climate ethics, and of intergenerational and international justice, as well as the de facto sacrifice of incarcerated people in the wake of climate change. Incarcerated people are not only routinely abandoned in climate change “disasters” and planning considerations but are also used as disposable labor to absorb and contain the effects of climate change. One example is the cleanup of the BP oil spill in the Gulf Coast (Clarke; Pellow, “Prisons and the Fight”).

The Ocean-Climate Nexus

Climate justice advocates and groups informed by Black feminism and/or led by Black women – such as Another Gulf is Possible, the Gulf Coast Center for Law and Policy, and the Urban Oceans Lab – have been actively critiquing the absence of water, especially oceans, from climate policy, law, and so-called solutions on national and international scales.²⁶ The neglect of the oceans is surprising, since, according to the European Union (EU) Commission on Oceans and Fisheries,

the ocean is a key enabler of life on Earth, producing 50% of the oxygen in the atmosphere, absorbing about 25% of human-produced carbon dioxide emissions and 90% of excess heat in the climate system, and regulating the global climate. The ocean has greatly slowed the rate of climate change but also been among its first victims. (Directorate-General for Maritime Affairs and Fisheries)

The mere mention of oceans in COP26 has been celebrated by some as a landmark victory. “While ocean health, biodiversity and climate change have traditionally been siloed under UN processes, there has been increased recognition that they are inseparable issues.” This increased recognition has focused on the oceans as resource and site of value, as well as possible solutions for carbon capture and mitigation.²⁷ The Oceans day at COP26, a flurry of Ocean declarations, upcoming events around “Blue finance” and increase of Maritime protected areas, and interest in “nature-based solutions” appear to signal progress on the issue of the neglect and catastrophic depletion of the oceans (Aldred). From a Black feminist

²⁶ For example, the Urban Oceans Lab, Ocean Justice Forum, Another Gulf is Possible, the Gulf Coast Center for Law and Policy, and Red, Black, and Green New Deal (RBGND).

²⁷ For example, see “Sailing Towards Net-Zero at the IMO-UNEP Innovation Forum” (Ocean Economist).

perspective, however, the belated turn to the oceans is radically insufficient and flawed.

What else comes into view about the ocean–climate nexus when seen through a Black feminist hauntology? And what might its implications be for climate justice? Water is, as Morrison and Alexander claim, retentive, a site of memory that cannot be localized in place, that exceeds and precedes humans, returning to its source and to consciousness, in “floods” and crossings (Morrison, “The Site of Memory” 243). As the source of life, and of our marine mammal ancestors in particular, the ocean is a portal onto the deep time of evolution and geological change (Alaimo). Human bodies of water are sustained only through the recognition of the water that runs through them and composes them, water that has and will run through countless other bodies and entities.²⁸ Alexis Pauline Gumbs’s provocation that “all water functions as a portal to all water” opens onto a revaluation of oceans in terms that indicate the overlap of the hauntological and ecological, such that “a non-anthropomorphic understanding of the ocean can flow, and has flown creatively and spiritually in part from the fact that humans and marine mammals need not be understood as separate beings. They can co-exist in the same bodies, the same psyche, the same breath” (Gumbs and Sharpe 27, 22).

Water retains and carries memories, such as those of toxicity and extinction, forced transportation, and decomposed bodies. As Elizabeth DeLoughrey notes: “While the sea is understood as external to human experience, we carry its waste in our bodies: radioactive and other munition and industrial waste dumping has contributed to the increasing presence of heavy metals in marine mammals and human beings” (707). The denial of this transgenerational and species hauntological relation, for example, in the massive dumping of nuclear waste, toxic heavy metals, and unburied dead into the oceans, comes at an incalculable cost. It returns to haunt all past, present, and future beings in rippling rings of active memory that call for remedy. Yet as the material residue of the otherwise forgotten past, the bottom of the ocean might be read and heard as an archive of the defeated that is a call to something to be done. In contrast with the hegemonic resource model that would decry such dumping for its impact on fisheries and marine mammals as sources of value in terms of economics or biodiversity, a Black feminist climate justice would work from a hauntology of trans-species and trans-generational memory and inheritance, and the ethical obligations that come with this.

This would be a practice and theory of climate justice animated by the caution that M. Jacqui Alexander offers: “The dead do not like to be forgotten [. . .]

28 See Neimanis.

Sentience soaks all things. Caresses all things. Enlivens all things. Water overflows with memory. Emotional Memory. Bodily Memory. Sacred Memory” (289–290). Currents and reefs of memory anchor the oath that Alexander’s ancestor “had sworn never to betray: all life is shared with those at the bottom of the Ocean, the bottom of the river, the bottom of the water” (314). For Clyde Woods and Katherine McKittrick, the imperative to remember, mourn, and honor the unknowable and unrecoverable and Alexander’s knowledge that “no one knows the mysteries at the bottom of the ocean” are the basis of “black geographies,” one that “couples placemaking with unknowable mysteries – the oceanic remnants of the middle passage and the transatlantic slave trade” (McKittrick and Woods 4). This understanding of Black geographies is already an opening onto the ecological, since Alexander’s oath is an obligation to those dead and forgotten people suicided or thrown overboard in the Middle Passage, but it is also an obligation to the ocean and to the water itself, to the life and matter that they have returned to in death.

In *M: Archive* and *Undrowned: Black Feminist Lessons from Mammals*, Gumbs has worked to explore how this oath might flower into a distinctive ethics and a kind of politics that is not rooted in the polis, but in the ocean and in the multiple temporalities and places that haunt us in the form of climate change. *Undrowned* puts the present – the acidification and pollution of the oceans, the “actual suffering and endangerment of marine mammals [. . .] caused by the extractive, destructive processes and consequences of capitalism,” rising sea levels, and forced migration – in a constellation with the Middle passage that remains held by the water, by us, by the water that is us (101, 1–2). Notably, Gumbs sensitively considers how multiple racialized forms of “captive birth” and family separation are echoed in and linked to forms of reproductive and social violence routinely carried out on marine mammals (32, 35, 88). Gumbs’s reflections on captive marine mammals lead us to deepen and expand the scope of Black feminist hauntological justice as including captive and separated kin across species lines. By interrogating the systems of violent capture and commodification that remain rooted in racism and colonialism, but cut across lines of species, time, and place, *Undrowned* suggests that the aspiration of Black life requires a remembrance of the meaning of conspire, “to breath together,” where this together includes “the narwhals” and other interspecies kin (9).

What Black feminist hauntology shares with eco-deconstruction is arguably a sense of matter as fundamentally unpossessable and inappropriable. However, in a Black feminist hauntology this “materialism in the raw” is informed by the historical and collective memory of Black womxn who (like the oceans and Earth)

have been treated as disposable and owned as property.²⁹ To the deconstructive critique of modern Western political sovereignty (Fritsch 213), a Black feminist hauntology adds the vital insight that its constitutive outside has not only included the Earth but also all those human populations deemed inhuman.³⁰ The treatment and status of the more-than-human, however, cannot be divorced from the systems of racialized and gendered political violence that Black feminist hauntology attends to. The disproportionate concentration of “environmental burdens” on Black communities, particularly Black womxn, is not, many Black feminist and (eco)womanist theorists claim, a coincidence. It is part of an ongoing history and “grammar” – in which Black womxn and nature, or Mother Earth, have been conceptually, practically, and normatively linked by apparatuses and orders of extraction, possession, domination, and death (Finney; Harris; Wynter, “No Humans Involved”).³¹

If Black womxn know that “the attempt to own life destroyed it, brutalized the earth” (Hartman, *Wayward Lives* 271), then a Black feminist hauntology opens onto an elemental revaluation of “the weather” and of water, of wind, fire, and earth, indissociable from the transubstantiation of womxn and lives that have tended to be seen as disposable or as passive victims (Ferreira Da Silva, “Toward a Black Feminist” 94; Frazier; Leong).³² The alchemical shift of an “antiblack climate” into a transformative hauntological justice can be glimpsed in Sharpe’s meditations on care, temporality, and the transubstantiation of forgotten and enslaved ancestors in what she calls “residence time,” “alive in hydrogen, in oxygen;

29 “To be white was to own the earth forever and ever. It defined who they were and what they valued; it shaped their vision of the future. But black folks had been owned, and being an object of property, they were radically disenchanted with the idea of property” (Hartman, *Wayward Lives* 271).

30 Taking up Spillers’s theorization of the ungendering of the flesh, what Zakiyyah Iman Jackson calls the “black *mater*/nal” is an analytic that explains how raciality functions in the service of heteropatriarchy and capital to exclude certain categories of people from relationality and capacities that have come to define the properly human subject (39). But, as Ferreira da Silva argues, it (the flesh) is also an opening onto an alternative sense of selfhood, community, and ethics that is terrestrial or ecological as well as transgenerational (“Reading the Dead” 43). Indeed, one of the key contributions of Black feminist climate justice might be to disrupt the assumption of a zero-sum game (in which the well-being of Earth and that of humans are pitted against one another) (Pellow, “Toward a Critical”).

31 See Riley (369). This is one way in which we might understand Hartman’s claim that: “nothing could be said about [. . .] modernity, global capitalism, [. . .] and the Anthropocene if it did not take her [the Black woman] into account” (Hartman, *Wayward Lives* 347).

32 This materialism “in the raw” is in some respects close to work such as Karen Barad’s and Anna Tsing’s that uses hauntological justice as a springboard for revisioning political ecology in

in carbon, in phosphorous, and iron; in sodium and chlorine.”³³ This “bloody silt thick with suffering” (Alexander 290) includes more-than-human ancestors, and requires the work of attending to the “intimacy of Atlantic Gray Whales who became extinct shortly after the era of the transatlantic theft complex and how the bones of those who did not survive, who were thrown or who jumped” became part of “an underwater ecosystem that is with us still. With us to this very day, with us long past our living and our possible, even probable, extinction” (Gumbs and Sharpe 23). Such practices of countermemory and care are an opening onto a transformative vision that avoids the anthropocentrism and presentism of commonly assumed core theories of justice. It bequeaths an alternative set of ethical commitments and responsibilities that animate a Black feminist climate justice. For instance, “Honor the Water” is the first pillar of the Black Climate Mandate. Here, the refusal of the devaluation of Black life and of water go hand in hand. Combatting racialized patterns of access to clean drinking water, and heightened vulnerability to water-based death, damage, and displacement in climate related disasters, also requires honoring water as sacred source of life and collective memory. Honoring is not abstract, but grounds duties and demands such as “the immediate end to deep water fracking and drilling,” activities that disturb and dishonor the depths and the dead and return to haunt the living and the unborn (M4BL 4).

In contrast to what is at best a unidirectional focus on the future and on future people (Thompson, *Intergenerational Justice* 2), in this hauntological transformative justice, defending the dead also means defending the Earth. It foregrounds duties to what Julia Gibson terms “the dead and dying of climate change” while holding space for multiscalar forms of grief, mourning, and remembrance. These duties entail a refusal of “intergenerational buck passing” that avoids responsibility for our inheritances, for the dead and the past as well as the future and to the Earth (Gardiner, “Climate Justice”). Commitments, such as to the “wake work” of mourning, burial, and remembrance, (Sharpe, *In the Wake*), are tied to survival and to aspirations, demands, and longing for ways of living that cannot be cap-

an age of extinction (“Quantum Entanglements”, “Troubling Time/s”, “After the End of the World”; Tsing et al.). The approach that I am sketching, however, avoids the move of collapsing or disappearing Black feminist thought and Black womxn’s positionality, history, and perspectives, into a more general acknowledgment of colonialism and racism – a move that I have argued can at best provide an incomplete accounts of climate injustice and attempts to reconceptualize it.

³³ “Equal Justice Initiative’s community remembrance project that takes the form of soil collection from approximate sites where black children, womxn, and men were lynched” (Sharpe, *In the Wake* 18; “And to Survive” 177).

tured in the existing grammar of the political and the social (Sharpe, “And to Survive”). It opens onto a care ethics that is also an affirmation of freedom dreams and of “insistent desires and political demands” (171).

The living might then understand themselves as indebted to the past and the dead, to the Oceans and the Earth, the socially dead, and bound to survive to usher in future generations. In turning to the past, there is an obligation to create a world in which future generations may live and live freely and well. This imperative is not itself free from ethical and political complexity.³⁴ Transformative justice, then, not only demands hospitality to the ghosts of the past and the dead, but it also demands of us, the presently living, that we are haunted by the future, by the world that we will leave to the not yet born, and (if we leave in its current state) that we must prepare ourselves to haunt. On the view that I am presenting here, indebtedness and inheritance are neither fully surmountable nor necessarily negatively charged. Rather, these hauntological relations of asymmetrical reciprocity are the source and center of life and thus of how to live, or ethics.

Conclusion

A Black feminist hauntology practices rememory and careful communion with ancestors, the undead, and inherited pasts, which are understood as a form of sustenance, guidance, and obligation. It therefore works from within and against the willed forgetfulness, silences, and attempted obliterations that cloak and sustain repeating and enduring racialized forms of violence, death, and dying, all carried out in the name of justice. In contrast to established views of climate debt, and of climate justice and ethics more generally, I identified a cat’s cradle of ethical and political obligation, of gift and indebtedness, that are at issue for this constellation of Black feminist thinkers. This hauntological structure or weave goes beyond focus on emissions or even vulnerability and suggests a much more complex picture of historical accountability and intergenerational relations than

³⁴ For instance, Dotson explores this point in regard to her own identity as a Black feminist who is responsible for and to her the past: “my family, on both sides, is shot through with people who, as a matter of survival and, then, according to notions of ‘liberation,’ fostered and imagined settler futurity as an aspirational goal” (192). In reckoning with settler colonialism, Dotson shows that in a Black feminist approach, justice means taking responsibility beyond one’s present life, and intentions, for inherited pasts, places, and aspirations. “It was, therefore, their historical burden to respond to what came before, to what they had inherited, and it had little or nothing to do with them as individuals, although it was as individuals in concert with others that they were compelled to respond” (Spillers, “Mama’s Baby, Papa’s, Too” 3).

is commonly assumed, and thus a departure from existing notions of climate debt and justice. Attending to the ethical obligations to the dead and to the Earth gives a different sense of the harms of climate change and of anti-Blackness than is generally supposed. Instead, part of the harm in question is the disruption of webs of relations and responsibilities, and in the unfinished business of past and ongoing systems of violence, that yield countless improperly mourned deaths and dyings. A Black feminist hauntology not only denotes mourning nor, as some critics might suggest, a melancholic fixation on the past and on death. As the basis for a vision of climate justice, Black feminist hauntology demands a world in which one can honor one's kin (past and present, living and dead), the oceans, and the Earth – a demand that would require the abolitionist work of envisioning the end of the world as we currently know it.

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Françoise Vergès

4 Racial Capitalocene

In the debates on the “Anthropocene,” global warming, and climate change, voices of the South and of minorities – the prime victims of these phenomena’s consequences – have developed an analysis that brings together race, capitalism, imperialism, and gender. This analysis rests on past struggles, such as the organization of farmworkers led by Cesar Chavez in California in the early 1960s for workplace rights, including protection from toxic pesticides, and of African American students in 1967 to oppose a city dump and in 1979 to oppose a landfill in Houston. Environmental racism became a site of struggle. The publication in 1987 of *Toxic Waste and Race in the United States*, a report by the Commission for Racial Justice of the United Church of Christ, was a turning point (United Church of Christ Commission for Racial Justice). It showed that race was the single most important factor in determining where toxic waste facilities were sited in the United States and that the siting of these facilities in communities of color was the intentional result of local, state, and federal land-use policies. In the 1980s, the Reagan administration’s practice of cutting the budgets of federal environmental agencies had aggravated racist decisions. The report demonstrated that “three out of every five Black and Hispanic Americans lived in communities with uncontrolled toxic waste sites” (xiv). Twenty years later, the United Church of Christ published another report confirming that “people of color make up the majority of those living in host neighborhoods within three kilometers of the nation’s hazardous waste facilities. Racial and ethnic disparities are prevalent throughout the country” (United Church of Christ Justice and Witness Ministries 11).

Between the two reports a global movement for environmental justice had emerged. In October 1991, the Delegates to the First National People of Color Environmental Leadership Summit drafted and adopted the “Principles of Environmental Justice,” which became a defining document for the growing grassroots movement for environmental justice. The preamble read:

We, the people of color, gathered together at this multinational People of Color Environmental Leadership Summit, to begin to build a national and international movement of all peoples of color to fight the destruction and taking of our lands and communities, do hereby re-establish our spiritual interdependence to the sacredness of our Mother Earth; to respect and celebrate each of our cultures, languages and beliefs about the natural world and our roles in healing ourselves; to ensure environmental justice; to promote economic alternatives which would contribute to the development of environmentally safe livelihoods; and, to secure our political, economic and cultural liberation that has been denied for over 500 years of colonization and oppression, resulting in the poisoning of our communities and

land and the genocide of our peoples. (First People of Color Environmental Leadership Summit)

The authors of the 2007 report warned that “for many industries, it is a ‘race to the bottom,’ where land, labor and lives are cheap” (United Church of Christ 14). Similar studies in India, South Asia, South America, Africa, and Europe demonstrated a global pattern of environmental racism and the ways in which states and multinationals have been avoiding environmental justice.

In this chapter, I try to answer the following question: Though minorities and peoples of the South have shown that they are the victims of racialized environmental politics – toxic waste, polluted water and rivers, pesticides, polluted food – have studies on the emergence of the *Anthropocene* addressed the role of race in its making? In other words, is the Anthropocene racial? Scholars have studied race as a central element of destructive environmental policies, but what connection can be made between the Western conception of nature as “cheap” and the global organization of a “cheap,” racialized, disposable workforce, given the conception of nature as constant capital and the fact that “the organizers of the capitalist world system appropriated Black labor power as *constant* capital?” (Robinson 309). What methodology is needed to write a history of the environment that includes slavery, colonialism, imperialism and racial capitalism, from the standpoint of those who were made into “cheap” objects of commerce, their bodies as objects renewable through wars, capture, and enslavement, fabricated as disposable people, whose lives do not matter?

What does this have to do with Cedric Robinson? In *Black Marxism*, Robinson writes that “for the realization of theory we require new history.” He adds, “Black radical theory was not made by choice but dictated by historical inheritance” (307). In the spirit of Robinson’s advice, I will try in this chapter to suggest ways of writing a history of environment that takes into account the history of racial capitalism. My interest in the history of racialized environmental politics is partly biographical: I come from Réunion Island in the Indian Ocean, which became a French colony in the seventeenth century and is today a French department. Growing up in a communist, anticolonial, and feminist family, I learned early that the environment had been shaped by slavery and colonialism – a reading of space that gave meaning to where cities were built, where poor people lived, and how the large sugarcane fields, rivers, mountains, volcano, and beaches had been inscribed in the colonial and postcolonial economy. I studied the combined work of scientists (first botanists, then biologists, oceanographers, and volcanologists), engineers, soldiers, and business executives (whether slave traders, slave owners, bankers, or multinational CEOs), which fabricated “nature” as excess that needed to be tamed and disciplined and, through the tourism industry, enjoyed. I ob-

served how the Cold War, the alliance between the military, the engineering company, the multinational, and the scientist, and the nature of the “green revolution” continued to transform nature in the Indian Ocean. More recently, understanding what is at stake in the negotiations about “climate change” means considering the place of these stakeholders in the context of a global counterrevolution – the erosion of rights, the politics of nonraciality beneath which, as David Theo Goldberg has argued, lurk more sinister shadows of the racial everyday and persistent institutional and structural racisms – and racial capitalism. Global warming and its consequences for the peoples of the South is a political question and must be understood outside of the limits of “climate change” and in the context of the inequalities produced by racial capital.

Anthropocene or Racial Capitalocene?

The term “Anthropocene” to describe the “human dominance of biological, chemical and geological processes on Earth” was first introduced in 2000 in an article jointly written by Paul Crutzen and Eugene Stoermer. They dated its emergence to the latter part of the eighteenth century, admitting that

alternative proposals can be made (some may even want to include the entire Holocene). However, we choose this date because, during the past two centuries, the global effects of human activities have become clearly noticeable. This is the period when data retrieved from glacial ice cores show the beginning of a growth in the atmospheric concentrations of several “greenhouse gases,” in particular CO₂ and CH₄. Such a starting date also coincides with James Watt’s invention of the steam engine in 1784. (17–18)

When and why the Anthropocene had occurred, its dangers, and what could stop them were widely debated in scientific journals and conferences. The narrative centered on the threat to human beings as an undifferentiated whole and was summarized thus: humanity would not survive if it did not slow down the emission of CO₂. Films and advertisements began to highlight the dangers of climate change, accentuating the loss of animal species and the idea of Earth as a common good. These media did not, however, take into account the asymmetry of power and instead marginalized what had been demonstrated in the 1980s: the role of racialized policies of public health and toxic waste disposal, weapons and pollution, land grabs and deforestation, the importance of the Cold War with its alliance between the chemical industry and the military, laws of commerce and monopolies. It was remarkable that these studies did not seek to locate points of intersection with emerging studies on imperialism and environment (see Beinart and Hughes; Crosby; Headrick). When Dipesh Chakrabarty wrote “The Climate of

History: Four Theses” in 2009, the hope was that a dialogue was finally starting between scientists and postcolonial thinkers. By focusing on the immediacy of climate change as a crisis, Chakrabarty framed the Anthropocene as a current transformation. This presentism ignored a deeper history and created the illusion of an organic and undifferentiated universal humanity. In his 2012 essay “Postcolonial Studies and the Challenge of Climate Change,” Chakrabarty referred again to the abstract figure of “the human in the age of the Anthropocene,” but, moving away from his 2009 conclusion somewhat, stated: “There is no corresponding ‘humanity’ that in its oneness can act as a political agent. A place thus remains for struggles around questions on intrahuman justice regarding the uneven impacts of climate change” (154). In answering his critics especially about “the rich always having lifeboats and therefore being able to buy their way out of all calamities including a Great Extinction,” he asked, “Would not their survival also constitute a survival of the species (even if the survivors quickly differentiated themselves into, as seems to be the human wont, dominant and subordinate groups)?” (“Whose Anthropocene” 112) Chakrabarty defends a notion of the Anthropocene that, according to Aaron Vansintjan, infers a “blanket humanity, a blanket history, a blanket geological record” which relies on “apolitical and colonialist assumptions” and “highlights the danger of using one framework (geology and climatology) to make universal claims about the world – it helps make only one world possible.” But the Anthropocene is a catchy term that

makes for an easy story. Easy, because it does not challenge the naturalized inequalities, alienation, and violence inscribed in modernity’s strategic relations of power and production. It is an easy story to tell because it does not ask us to think about these relations *at all*. (Moore, “Capitalocene”)

The notion “sweeps up within it the diverse, dynamic, and even contradictory discourse of peoples throughout the globe contending with catastrophic environmental change” (Todd) and maintains the nature/society division dear to Western thought. The notion of the Anthropocene is “de-historicizing, universalizing, eternalizing, naturalizing a mode of production specific to a certain time and place,” a strategy of ideological legitimation that blocks off any prospect of change (Malm 271). Student of anthropology Elizabeth Reddy has coined the expression “charismatic mega-category” to describe the temporality and spatiality produced by the notion of the Anthropocene. Sociologist Jason Moore has suggested the notion of a Capitalocene which brings back capitalism “as a world-ecology, joining the accumulation of capital, the pursuit of power, and the co-production of nature in dialectical unity” (“Capitalocene”). As Moore puts it, scholarship that posits

the exploitation of nature as an external relation to the exploitation of labor power does two things. First, it confuses matters, because nature and labor are not comparable entities. Nature is the field within which human activity unfolds, and is also the object, and precondition of, human activity. Second, it confuses matters yet further by establishing an arbitrary discontinuity between human environment-making – the exploitation of nature – and environment-making by other forms of life. (“Beyond”)

Moore dates the beginning of the Capitalocene to the sixteenth century, which also witnessed the “discovery of the New World” into which people were brought through the force of “blood and fire,” (Marx 786) the slave trade, the division of colonies among European powers, and the organization on a global scale of a mobile, racialized, gendered, and bonded workforce. Slavery and colonialism had a deep impact on world-ecology.

To the historian Joachim Radkau, “the chief problem of colonialism seems to have been not so much its immediate ecological consequences as its long-term impact, the full extent of which became apparent only centuries later, in the era of modern technology, and many times only after the colonial states had acquired their independence” (153). We must, in our narrative of the racial Capitalocene, integrate this long memory of colonialism’s impact and the fact that destruction in the colonial era becomes visible in the postcolonial era. In other words, we must add to the United Church of Christ’s 1987 study of racialized policies of the environment in the twentieth century a history of racial Capitalocene, with an analysis of capital, imperialism, gender, class, and race and a conception of nature and of being human that opposes the Western approach. In the 1991 “Principles of Environmental Justice,” the first principle stated that “Environmental Justice affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction.” The principle posits a new understanding of what it is to be human and challenges the international dialogue on climate change that focused on a strategy of adaptation. Adaptation through technology or the development of green capitalism has indeed been presented as a good strategy. Yet it does not thoroughly address the long history and memory of environmental destruction about which Radkau has written, nor the asymmetry of power.

In the reconfiguration of the world that followed the colonization of the Americas and the Caribbean, nature was transformed into a cheap resource, as endlessly renewable as the bonded workforce. It is human praxis as labor and the global use of a color line in the division of labor that must be studied, and not a “human” death drive. When Andreas Malm argues that “there is also a different kind of violence, not rapid but slow motion, not instantaneous but incremental, not body-to-body but playing out over vast stretches of time through the medium of ecosystems,” he raises the question of the narratives that would bring to light

this kind of violence. Indeed, if we find and read “stories and essays on the slow violence of the Bhopal disaster, oil exploitation in the Arabian Gulf and the Niger Delta, mega-dams in Indian, depleted uranium in Iraq” – to which we can add Katrina in New Orleans, the moving tide of toxic iron-ore residue in Brazil, polluting the water supply of hundreds of thousands of residents as it makes its way to the ocean, the consequences of nuclear tests in French Polynesia, the polluted water in Flint, Michigan, and the negative impact of agrobusiness – there are none “on climate change as such,” as if “the capacity to imagine violence seems to have reached its limits” (9). We have to renew the ways that violence is narrated.

Apocalyptic/Optimistic Views of Climate Change and Environmental History

Two views about climate change and the environment have been dominating the media and politics shaping the public debate: apocalyptic (humans are responsible for ecological destruction) and optimistic (scientists and engineers will find solutions). In 1991, Clive Ponting’s book *A Green History of the World* offered a wide view of human and ecological history that covered the globe and centuries. Though Ponting discussed slavery, colonialism, and the creation of the Third World, “Man” was his main culprit. But it was his narrative of the ecological suicide of Easter Islanders that became the exemplary apocalyptic narrative. In his opening paragraph, Ponting wrote:

Easter Island is one of the most remote, inhabited places on earth. Only some 150 square miles in area, it lies in the Pacific Ocean, 2,000 miles off the west coast of South America [. . .] At its peak the population was only about 7,000. Yet, despite its superficial insignificance, the history of Easter Island is a grim warning to the world. (1)

Ponting’s analysis blamed the disappearance of Eastern Islanders on a human predisposition for destruction. His book was an instant success, offering a paradigm for the whole environmental history of the world that both frightened and pacified: if there was nothing to do, there was nothing to do. The book inspired, and continues to inspire, movies and novels. A whole genre of popular cinema has blossomed that offers a narrative of human hubris in which a white American male saves first “his” family and then “his” community. Individual mad scientists or cynical politicians are the villains; nothing is said of an economic system that privileges profit and fabricates racialized, disposable beings. The success of Ponting’s book shows why the apocalyptic narrative is an ideological strategy that blames out-of-control forces rather than structures of power. But Easter Islanders

did not commit suicide; they were the victims of systematic murder committed by Peruvian slave traders in the nineteenth century. The apocalyptic view rests on a pessimistic view of human nature. The optimistic view, on the other hand, is deeply steeped in the tradition of belief in progress. Ferdinand Braudel, whose work has been vital to historians of the environment, embodies that tradition. To him, climate is a long-term, mostly stable element which changes more slowly than historical time (though Braudel sometimes portrays nature – the sea, the mountains, rice, maize – as the main actor of history). Yet, as Eyal Weizman has written,

the climate can no longer be considered a constant [. . .]. The current acceleration of climate change is not only an unintentional consequence of industrialization. The climate has always been a project for colonial powers, which have continually acted to engineer it. (qtd. in Wark)

Apocalyptic and optimistic approaches have inspired the current rhetoric of a “crisis” produced by human nature or by an error in progress, evident in three recent moments in politics of the environment. The first moment is the emergence of a Western-led transnational network of conservation work which appeared in the years before World War I. The second is the Western-led boom of environmentalism that appeared around 1970 and developed rapidly in response to decolonization, the first oil crisis, the alliance between the chemical industry and the army (pesticides for war and the green revolution), the culmination of international programs on birth control in the Third World, the War in Vietnam, the proxy wars in Africa, revolutionary social movements,¹ the dictatorships in South America, the interventions in the Middle East. Indeed, starting in the early 1970s, European States as well as the United States started to issue regulations about clean air, clean water, and the protection of nature. In 1972, *The Limits to Growth* by the Club of Rome became an international best seller; that year in Stockholm, representatives from more than 100 countries met for the first United Nations Conference on the Human Environment and the United Nations Environment Programme (UNEP) was created. The third moment is the upswing of environmental issues all over the globe at the end of the Cold War, culminating in the Earth Summit in Rio de Janeiro in 1992. In December 2015, not long after the Paris attacks, the Cop21 opened. The rhetoric on the relationship between political op-

¹ In the late 1950s, at a series of World Congresses on world population, representatives of the US government started an ideological campaign in which they argued that global security and peace were tied to a low birth rate in the Third World. It became a truth: Third World countries were said to be condemned to poverty and underdevelopment if their birth rate was not controlled.

position to climate change and world security, and the “war on terror,” has opened a new chapter in the development of the racial Capitalocene.

To unpack the different levels of racialized environment we need to go back the long sixteenth century, the era of Western “discoveries,” of the first colonial empires of genocides, of the slave trade and slavery, the modern world mobilized the work of commodified human beings and uncommodified extra-human nature in order to advance labor productivity within commodity production. Racialized chattel were the capital that made capitalism. Africa was forced to share its social product – human beings – with the labor productivity within commodity production. Racialized chattel were the capital that made capitalism. Africa was forced to share its social product – human beings – with the Atlantic slave system. But the slave trade consisted of not only the organized deportation of millions of Africans to continents and islands, but also a massive transfer of plants, animals, diseases, soil, techniques, and manufactured goods from Europe. Capitalism relied for growth on an endless access to nature as excess, as a bounty of “extra-human biological systems and geological distributions” (Moore, “Cheap Nature” 285): plants, silver, gold, iron, coal.

Radical Agenda

A history of the racialized Capitalocene à la Cedric Robinson will help us understand that climate change is not about human hubris, but the result of the long history of colonialism and racial capitalism and its Promethean thinking – the idea that “Man” can invent a mechanical, technical solution to any problem. To develop a theory from a renewed history of the racial Capitalocene is to study the matrix constructed by the army/science/engineers/business/state alliance. On 8 January 2016, a court in Oregon fined the Biotech firm ArborGen \$53.5 million in compensation and punitive damages for using “trickery and deceit” to defraud workers. ArborGen is a US-based company, a leader in research and development for genetically engineered trees. It presents itself as a “leading global provider of conventional and next generation plantation trees” (ArborGen). The company develops mostly eucalyptus, which is the second-most popular tree for the paper industry (pine is the first). On its website appear the following questions and their answers: “What Makes a Profitable Forest? Advanced Technology, Incomparable Value”; “What Makes a Valuable Tree? Superior Growth, Maximum Value”; “What Makes a Superior Seed? Exceptional Breeding, Outstanding Results.” It is the vocabulary of profit for profit. ArborGen has a rival: the Israeli biotech company Futuragene, which has developed a unique technology that accelerates tree

growth, again mostly eucalyptus. It is now a branch of the Brazilian plantation group Suzano, which grows 500,000 hectares of eucalyptus trees a year and has partners in China, Thailand, and South Africa. ArborGen and Suzano compete in an industry (forestry and paper) which generates \$400 billion annually. The eucalyptus is known for being invasive and contributing to the depletion of water, desertification of soils, and loss of biodiversity. Once they are engineered, these effects are multiplied. Further, the paper industry always hides the waste it produces. Yet, waste embodies, more than ever before, the new era of the Capitalocene. Capitalist production is waste production. According to a 2000 study carried out by five major European and US research centers, one-half to three-quarters of annual resource inputs to industrial economies are returned to the environment within a year as waste. It must be said, however, that there is a huge gap between the amount of waste produced by multinationals and countries of the North and the amount of waste produced by populations of the South (Matthews et al.).

Green capitalism and the biotech industry hold the optimistic discourse, offering seductive solutions: a green and sustainable future created by engineers and scientists, with the help of drones, satellites, and the new international laws of property and trade. Philosopher Isabelle Stengers has argued that we are witnessing an authoritarian management of societies based on Margaret Thatcher's "There Is No Alternative." Stengers argues for a "skepticism of the probable" in order to take a stand with the "possible" and commit to the multiple and always precarious attempts which bet on the possibility of a world which does not answer the probabilities offered by green capitalism. Building counterpowers means exposing the dangers of bioengineering to human health, biodiversity, and the lives and well-being of minorities, indigenous communities, and poor peasants, the majority of whom are women. It also means developing a radical curriculum based on a decolonization of knowledge production and institutions and a de-nationalization of knowledge. Knowledge production must take place with an awareness of diverse living realities and multiple publics without imposing the distance, disregard, or disdain of privilege. World citizenship and humanism must be brought in as decolonializing alternatives. A curriculum of radical pedagogy for the politics of the possible will challenges all forms of dehumanized work in favor of shared, life-affirmative labor practices, resisting the economy of speed for efficiency and acknowledging that time is needed to nourish knowledge. The politics of the possible also rest on the imagination – on the freedom to dream other pasts and imagine other futures than those suggested by the racial Capitalocene. Afrofuturism, for example, offers a way of looking at possible futures or alternate realities through a Black cultural lens, blending the future, the past, and the present. "Each generation must out of relative obscurity discover its

mission, fulfill it, or betray it,” (206) Frantz Fanon wrote in 1961. We are at a critical juncture, a historical moment that sends us into our inheritances to find sources and references for the struggle ahead.

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Johanna Oksala

5 Feminism, Capitalism, and Ecology

The term *ecofeminism* was coined in the 1970s when the emerging large-scale environmental movement intersected with various social justice movements such as feminism. Ecofeminism continued to develop as a theoretical and political platform throughout the 1980s and produced groundbreaking analyses on the intersecting oppressions of women and nature.¹ However, in the 1990s it began to be strongly criticized for essentialism, ethnocentrism, and anti-intellectualism. Instead of becoming an integral aspect of feminist theory complementing and correcting its anthropocentric critiques with ecological perspectives, “ecofeminist” became almost a label of derision. As the American ecofeminist Greta Gaard provocatively writes, ecofeminists came to be viewed as “anti-intellectual goddess-worshippers who mistakenly portray the Earth as female and issue totalizing and ahistorical mandates for worldwide veganism” (32).

A radical re-evaluation of ecofeminism appears vital today, however, for both political and theoretical reasons. First, a viable feminist critique for our time requires confronting head-on the severe ecological crisis that we are currently living through. Environmental problems, particularly human-induced climate change, pose arguably the greatest political challenge humanity faces today, and no political movement can therefore afford to ignore their significance. My wager is that if feminism does not seriously engage with ecology and think through its relationship to environmentalism, it will be difficult to recognize it as a relevant political force shaping our future in a meaningful way in the twenty-first century.

Second, there has been a theoretical shift within academia: environmental issues are no longer considered solely the realm of the natural sciences. Researchers in the humanities and social sciences have been waking up to the realization that most environmental issues today have profound social, political, and ethical significance. Environmental issues also have important gender dimensions, as well as concrete political consequences for gender equality. This is true of such varied issues as climate justice, food security, and energy justice: they require both ecological and feminist analyses. It is thus important that feminist theory forms a strong voice in the developing discussion of environmental issues in the humanities and social sciences today.

1 For some foundational texts on ecofeminism, see, for example, Daly; Griffin; Merchant; Shiva.

Third, a promising route for bringing feminism and environmentalism together today is emerging through contemporary feminist critiques of capitalism. Feminist theorists are increasingly returning to the insight that capitalism must constitute the critical frame for understanding contemporary forms of women's subordination. As Nancy Fraser writes, after decades in which the term *capitalism* could scarcely be found outside the writings of Marxist thinkers, commentators of varying stripes now worry openly about capitalism's sustainability, and activists throughout the world mobilize in opposition to its practices. Rather than understanding this as a mere shift in intellectual or political fashion, Fraser sees it as "a symptom of the growing intuition that the heterogeneous social ills – financial, economic, ecological, political, social – that surround us can be traced to common structural underpinnings, and that reforms that fail to engage with these are doomed to fail" ("Behind Marx" 1). My contention is that this resurgence of Marxist and socialist feminist scholarship opens up interesting avenues for the re-examination of the theoretical connections among feminism, capitalism, and ecology.

The aim of my article is to lay down the philosophical groundwork for such projects. The argument proceeds in four stages. I will take the existing tradition of socialist ecofeminism as my starting point and outline two different ways that the connections among capitalism, the subordination of women, and the destruction of the environment have been made in this literature. I distinguish between materialist ecofeminism that is empirically grounded and Marxist ecofeminism that puts forward a structural argument about the connections among capitalism, gender oppression, and environmental destruction. These two theoretical positions are necessarily simplifications of much more complex and varied discussions, and their function here is merely to expose to critical scrutiny the different philosophical grounds for defending anticapitalist ecofeminism. In the third section, I will argue that the Marxist ecofeminist position needs to be both updated and revised in order to account for the different, sometimes contradictory mechanisms for the capitalization of nature that have become prominent today. I will underscore two developments in particular: the dominance of neoliberalism and the development of biotechnology. I will conclude by summing up the theoretical grounds on which a contemporary political alliance between feminist and ecological struggles against capitalism can be built.

Materialist Ecofeminism

The critiques of ecofeminism targeted chiefly its alleged ontological and methodological essentialism. With the dominance of poststructuralist modes of thinking in the 1990s, the unity of the category of women had already come under heightened critique. Ecofeminism not only seemed to take the category of women as a given, it also affirmed the equation of women and nature. Whether the connection between women and nature was understood as biological or as socially and historically constructed, it had traditionally operated as a key instrument of women's oppression. Feminism had fought hard against the idea that women were somehow closer to nature than men, and therefore less rational, cultured, and capable of moral and political deliberation, for example. Ecofeminism seemed to reverse these arguments by emphasizing the inescapable link between women and nature and thereby merely reinforcing forms of patriarchal domination.

A further problem concerned the methodological essentialism inherent in much of the ecofeminist theorizing of that time. It appeared unaware of the ways that its own claims and theories were socially constructed and embedded in particular, often specifically Western social and political contexts. The common charge was that it promoted an idealist and uncritical understanding of third-world women's purported "embeddedness" in nature and their supposedly more holistic understanding of it.² Hence, ecofeminism was, at best, an irrelevant distraction from feminism's real work of addressing social injustices, or, at worst, a form of oppression itself.

Materialist ecofeminists were able to subvert these pitfalls by making a more limited, empirical argument. They avoided the charges of essentialism by rejecting all spiritual, abstract, and totalizing connections between women and nature, and emphasized instead the actual material conditions of women in specific geographical and cultural contexts. On the basis of such an emphasis, it was possible to argue that women in many parts of the global South, for example, were "closer to nature" only in the very concrete and material sense that they, typically, had to fetch water and firewood, as well as being responsible for the small-scale subsistence farming ensuring the survival of their families. This meant that they were often the first victims of environmental destruction.

In their defense of materialist ecofeminism, Greta Gaard and Lori Gruen, for example, acknowledge that environmental degradation affects all people and is

2 On feminist critiques of ecofeminism targeting its ethnocentrism and its tendency to essentialize the woman-nature connection see, for example, Agarwal "Gender and Environment"; "A Challenge"; Braidotti et al.; Nanda).

not exclusively a women's issue. Their argument is that it is nevertheless a feminist issue because women and children are the first to suffer its consequences. "Globally, women produce approximately 80 percent of the world's food supplies, and for this reason women are most severely affected by food and fuel shortages and the pollution" (212). Listing oppressive ideologies and noting that they are intersecting or connected to one another is obviously valid in the sense that they must occur in some kind of water resources" (163). According to them, it is thus not necessary to evoke metaphorical or essentialist ideas about women's greater propensity for protecting nature because for women living under harsh material conditions, environmental activism is simply a form of self-defense (see also, for example, Mellor 7). Similar ideas are put forward in the United Nations Population Fund's (UNFPA) study of the consequences of climate change: "Women – particularly those in poor countries – will be affected differently than men. They are among the most vulnerable to climate change, partly because in many countries they make up the larger share of the agricultural workforce and partly because they tend to have access to fewer income-earning opportunities. [. . .] Drought and erratic rainfall force women to work harder to secure food, water, and energy for their homes." In other words, materialist ecofeminism can be understood to build on the acknowledgment that specific groups of women have a distinct connection to the environment through their daily interactions with it. In these specific instances at least, there is a clear strategic incentive for feminism and environmentalism to join forces: protecting the environment also directly improves the lives of poor women.

Although such contextual and empirically grounded arguments might be politically and strategically important, they provide insufficient theoretical grounds for ecofeminism. Instead of exposing a systemic or structural connection between gender oppression and environmental destruction, they merely describe their current intertwinement. Environmental problems tend to exacerbate already existing social problems because the weakest and most vulnerable groups have the fewest resources for mitigating them. When more systemic explanations of the link are provided, they are often formulated in frustratingly vague terms and are based on the idea of the twin dominations of women and nature. The historical and conceptual association between women and nature is understood to be politically significant because it has formed an important justification for patriarchal domination: *the feminization of nature* and *the naturalization of women* are two aspects of a single historical process that has functioned as an ideological requisite for women's and nature's ensuing subordination.

Gwyn Kirk, for example, argues that "in the service of capital accumulation, white-dominated, capitalist patriarchy [. . .] creates 'otherness'; it oppresses both women and nature, but also "people of color and poor people worldwide. [. . .]

This continual process of objectification is the central mechanism underlying systems of oppression based on class, race, gender, and nation” (349). Mary Mellor expounds that “Industrialism, capitalism, colonialism, racism, and patriarchy are the different manifestations of a many-headed Hydra that has its fingers around the throat of women, poor people, and the planet” (155). Gaard and Gruen write similarly that “the current global environmental crisis is the result of the mutually reinforcing ideologies of racism, sexism, classism, imperialism, speciesism, and naturism.” These ideologies are best understood as “*force fields* that intersect with one another [. . .] to create complex interrelated and mutually reinforcing systems of oppression” (170).

Listing oppressive ideologies and noting that they are intersecting or connected to one another is obviously valid in the sense that they must occur in some kind of social totality. Such all-encompassing explanations may help feminists describe experiences or instances in which different axes of domination intersect, but they do not explain how and why they occur together in specific forms.³ If ecological feminism seems to cover all forms of oppression and injustice, it further risks losing a clear theoretical focus and political aim. Materialist ecofeminism would, at best, amount to an instance of “affinity politics,” a flexible formation able to accommodate many different theoretical and political positions behind the twin goals of “planetary survival and an egalitarian future” (Carlassare 101).

I contend that the major contribution of Marxist feminist thinkers to the project of ecofeminism has therefore been the insight that we can identify distinct mechanisms specific to the systemic logic of capitalism that tie together gender oppression and environmental destruction. In other words, Marxist ecofeminism not only repudiates gender essentialism by insisting that the connection between gender oppression and environmental devastation is historically and culturally specific, but through its critical analysis of capitalism, it is capable of providing a rigorous argument for why this connection is nevertheless structural and not merely historically contingent or accidental. The feminization of nature and the naturalization of women do not function merely as ideological justifications for an abstract and general logic of domination, but concretely structure capitalist society through gendered social and economic practices and divisions of labor. The systemic character of the connection between gender oppression and environmental devastation becomes discernible once we recognize the indispensable

³ The Marxist-feminist critique of intersectionality theory has focused on this issue in particular. Sarah Farris, for example, argues that although intersectionality theory speaks loudly to Marxists because it refuses to treat racial and gendered oppressions as secondary forms of oppression, it falls short of delivering the comprehensive theory it promises. For seminal texts on intersectionality theory, see, for example, Crenshaw; Collins.

function that the naturalization of women's reproductive labor plays in contemporary capitalism.

Marxist Ecofeminism

The majority of the Marxist-feminist theorists writing in the 1970s and 1980s on women's reproductive and caring work theorized it as a form of labor and appropriated the Marxist framework intent on exposing the mechanisms of exploitation. The domestic labor debates, for example, were essentially concerned with the question of whether women's domestic or reproductive labor was productive work and produced surplus value (see, for example, Benston; Federici; Vogel). A distinct strand in this scholarship, however, focused on the idea of primitive accumulation instead. The idea of primitive accumulation lent itself more readily to ecofeminist theorizing because it was not concerned with the productivity of human labor, but focused instead on its necessary preconditions. It was able to bring into Marxist-feminist analyses activities and resources that were productive of important use-values but not exchange value, and were therefore structurally excluded from commodity markets.

Primitive accumulation refers to the insight that capitalist accumulation has never managed to operate with just the mechanisms of the exploitation of labor power and the appropriation of surplus value. It has always relied heavily on outright plunder and theft. As Marx famously formulates the idea in the first volume of *Capital*, capital comes into the world "dripping from head to foot, from every pore, with blood and dirt" (Marx 435). Primitive accumulation is an inherently violent process of expropriation: extracting resources and appropriating them for free or without adequate compensation. Examples include the enclosure of the commons, forced migration, and the slave trade. The domination of nature and the extraction of natural resources can be viewed as another example of primitive accumulation: naturally produced use-values are plundered for productive consumption as raw materials and treated as commodities in the capitalist circuits of valorization. Colonialism historically functioned as an effective political strategy for this kind of expropriation: resources such as gold, ivory, and rubber were extracted from the global South in order to enrich the global North.

There is an ongoing debate on whether primitive accumulation was a historical process that preceded the establishment of properly capitalist forms of production, or whether it is best understood as an ongoing process. Marx describes it as a historical process of wealth transfer from capitalism's periphery to the center that enabled the emergence of capitalist economies in Europe, but many contem-

porary Marxist thinkers emphasize its continuous character and its necessary, structural links with capitalism.⁴ The idea of “ongoing primitive accumulation” is central for Marxist-feminist theorists such as Maria Mies, who argues in her seminal work that both nature and women’s reproductive labor are expropriated as a “free resource” under capitalism. Mies forges a historical and structural link among the birth of capitalism, colonization, the subordination of nature through industrialization, and the simultaneous destruction of women’s autonomy over their bodies that characterized the witch hunts in Europe. Colonies, nature, and women were thus dominated, controlled, and violently expropriated by white capitalist men in a structurally similar way and as part of the same historical process driven by the goal of capitalist accumulation.⁵

The violent subordination of women under men and the process of capital accumulation was first acted out on a mass scale during the witch hunts in Europe. But ever since, it has constituted the infrastructure upon which so-called capitalist production relations could be established, namely the contractual relationship between the owners of labor power and the owners of the means of production. Without this infrastructure of nonfree, coerced female or colonial labor in the broadest sense, the noncoerced, contractual labor relations of free proletarians would not be possible. Women and colonial peoples were defined as property, as nature, not as free subjects who could enter a contract. Both had to be subordinated by force and direct violence. (170)

Mies uses the metaphor of an iceberg to illustrate the way that capitalist exploitation of wage labor relies on violent processes of expropriation: capitalism is an iceberg economy where capital and waged labor form the visible economy counted in GDP, and where women’s reproductive work, work in the colonies, and nature’s production are externalized from the official economy and form the large underwater part (xi). Ideologically, the essential processes of externalization were justified by the “naturalization” of women and the colonies: they were defined as uncontrolled, dangerous, savage nature to be subdued by force (90). “In the course of the last four or five centuries, women, nature, and colonies were externalized, declared to be outside of civilized society, pushed down, and thus made invisible as the under-water part of an iceberg is invisible, yet constitute the base of the whole” (77). The rationale for this process of externalization was simple: it allowed capitalists to forego costs that they otherwise would have had to cover. When the labor of women and colonial subjects was considered a natural resource, it was freely available like air and water (110).

4 David Harvey, for example, renames primitive accumulation “accumulation by dispossession.”

5 Ariel Salleh’s work was also central in laying the foundations for Marxist ecofeminism. In *Ecofeminism as Politics*, she argues for the common political goals of feminist, socialist, ecological, and indigenous struggles against transnational capital.

According to Mies, the same process of expropriation that characterized early capitalism is still ongoing because it is a structural and necessary aspect of capitalism. The prevalence of both direct and structural violence against women, particularly in the global South, should be understood against the logic of ongoing primitive accumulation, which constitutes the precondition for capitalist exploitation. Mies's examples range from such overt instances as slavery and sex trafficking to more complex phenomena such as mail-order brides, sweatshop labor, and sex tourism.

Nancy Fraser has put forward a similar argument recently. She too emphasizes the necessary and complementary processes of capitalist expropriation, which do not operate through the contractual relationship through which capital purchases labor power in exchange for wages. Rather, expropriation works by confiscating capacities and resources and conscripting them into capital's value circuits. "The confiscation may be blatant and violent, as in New World slavery – or it may be veiled by a cloak of commerce, as in the predatory loans and debt foreclosures of the present era. [. . .] The confiscated assets may be labor, land, animals, tools, mineral or energy deposits – but also human beings, their sexual and reproductive capacities, their children and bodily organs" ("Expropriation and Exploitation" 166). Hence, although some subjects have access to labor markets – possess the right to sell their labor and have the ability to compete within markets – others are simply expropriated of their bodies, land, and even life, and treated as disposable. Intersecting with gender, racialization has functioned and continues to function as the key instrument for drawing the boundary between these two groups.⁶

To sum up this section, the Marxist-feminist argument contends that, in addition to the appropriation of surplus value produced by wage labor, capitalism relies on the ongoing and violent expropriation of women, Indigenous peoples, non-human animals, and the biosphere. The expropriation of women's reproductive labor is therefore structurally analogous to and historically contemporaneous with the extraction of natural resources. At various points in history and to varying degrees today, women have been violently forced to give up autonomy over their bodies and reproductive capacities, and these capacities and the labor connected with them have been extracted from them for free and put to the service of capital accumulation. This process is masked and legitimized by an essentially

⁶ Michael Dawson argues that understanding the foundation of capitalism requires understanding the ontological distinction between superior and inferior humans – codified as race – that was necessary for slavery, colonialism, the theft of lands in the Americas, and genocide (147).

ideological process that “naturalizes” women – understands them as being less civilized, less rational, and closer to nature.

The theoretical or systemic grounds for linking the oppression of women to ecological devastation are not primarily ideological, however, but functional. Both “women” and “nature” have a similar, indispensable function in the mechanism of expropriation: they occupy analogous positions in the logic of capitalist accumulation, in which the mechanisms of exploitation are dependent on the invisible base of expropriation. In other words, women and the colonies are not only conceived of as “nature,” they are expropriated as “nature.”

The Capitalization of Natures

Marxist-feminist thinkers such as Mies provide a powerful account of the extent of capitalist expropriation by forging a systemic link among capitalism, gender oppression, and ecological devastation. Such an account makes it possible to draw together witch hunts, colonialism, open-pit mines, and sex tourism under the same systemic logic, but the drawback is that we end up with very abstract theorizing about an extremely broad and heterogeneous set of phenomena – geographically, culturally, historically, and theoretically. I contend that this framework therefore requires some revision and updating to make it more precise.

In addition to identifying and analyzing capitalism’s drive to expropriate, cut costs, and “free-ride,” discussed so far, in my view it is necessary also to identify at least two other inherent tendencies that characterize the ways in which capitalism today absorbs both nature and women’s reproductive labor into its value circuits: *the commodification of nature as nature* and *the real subsumption of nature*. At times these mechanisms strengthen and reinforce each other, but at times they work at cross-purposes.

Identifying these additional mechanisms should be seen as a response to the shifts that have taken place in capitalism in recent decades. As many theorists argue, capitalism today is more fluid and flexible than the Eurocentric capitalism that led to the colonialism of the eighteenth and nineteenth centuries (Nanda 366). I want to underscore two developments in particular: the rise of neoliberalism as the dominant economic paradigm and the spectacular development of biotechnology and its extensive commercialization.

The Commodification of Nature as Nature

According to eco-Marxist thinkers such as Mies, the key problem with capitalism's expropriation of nature (including women's reproductive capacities) is free-riding: its failure to pay its bills. Nature is externalized as a costless resource that is implicitly assumed to be infinite and can therefore be expropriated without compensation. As Jason Moore writes, the "free gifts" of nature are not "low-hanging fruit" that can simply be picked, however. The idea of primitive accumulation effectively conveys how the "cheap natures" are in fact produced: they are expropriated through violent and destructive processes such as slavery or open-pit mines (64).

However, a particularly significant trend characterizing contemporary neoliberal capitalism is the opposite tendency: the attempt to internalize more and more activities and assets into capitalist markets. According to neoliberal economic theory, marketization is a particularly effective means of speeding up economic growth, given that GDP is measured in terms of market transactions. Hence, although we can certainly still identify significant processes of externalization operating today – for example, the polluting of the atmosphere with excessive greenhouse gases – we also have to identify mechanisms that seek to internalize the environment more fully into capitalist markets. Whereas in the early phases of capitalism, "virgin territories" still existed for venture capitalists to discover and expropriate, such outsides are hard to find today. Venture capitalism has been forced to take new, imaginative forms.

Neil Smith has put forward the powerful argument that we are currently living through a period in which our socioeconomic relationship with nature has been dramatically transformed: nature has become capitalized to an unprecedented extent. Capitalist nature has always been commodified in the sense that naturally provided use-values have been plundered for productive consumption. However, today a whole new range of "ecological commodities" has been produced. Smith writes: "Whereas the traditional commodification of nature generally involved harvesting use values as raw materials for capitalist production – wood for tables, oil for energy, iron ore for steel, various corns for bread – this new generation of commodities is different" (17). The new ecological commodities, such as carbon or pollution credits, paradoxically commodify nature *as nature*, as something that is produced as external to capitalist expropriation, but are then internalized into the capitalist economy by giving them exchange value. The value of the commodity produced – for example, an area of rainforest that offsets a certain amount of carbon produced by air travel – rests precisely on the fact that it cannot be productively consumed. "Landowners possessing tracts of forest land (generally in poorer tropical countries) are paid not to cut their forests,

while major polluters in more industrial parts of the world can purchase these credits as a means to allow them to continue to pollute” (19).

Hence, we can identify a twin movement: capital externalizes costs – for example, by emitting pollution – which provides opportunities for capital accumulation through mechanisms of internalization by other firms (or sometimes even the same firms) in the form of pollution trading. Capitalism’s appropriation of the environment thus uses mechanisms of both internalization and externalization relatively flexibly, depending on the social and political context, in order to maximize profits and fuel economic growth. Neither set of mechanisms is unproblematic from an ecological perspective. Capitalism’s free-riding on nature is obviously problematic, but the attempt to protect the environment by turning it into an internal part of capitalist markets also has serious problems.

First, from the perspective of economics, it is difficult to fully internalize the externalities produced by the environment within the self-regulating market system. The environment is not produced like other commodities; instead, it is a complex, integrated whole, which ultimately includes the entire biosphere. As John Bellamy Foster explains, in order to internalize the environment within the market system, complex ecosystems have to be first broken up into distinct goods and services, such as air quality, a specific species of plant or animal, or the maintenance of global temperature, for example. These specific parts are then imputed prices through the construction of supply and demand curves. The process of pricing is also fraught with difficulty, however. In hedonic pricing, consumer preferences are established through the demand for goods and services that are closely associated with a given environmental product. In the contingent valuation method, hypothetical markets are constructed and consumers are asked to indicate their preferences through surveys. Using these survey responses, economists then aggregate the results across the entire population in order to construct demand curves for the hypothetical environmental commodities. Finally, market mechanisms and policy instruments are created in order to either change prices in existing markets or to create new markets. Due to the difficulties in all these stages, markets in environmental protection have not functioned very well, even in their own terms, as markets (27–28).⁷

From a philosophical perspective, the problems with the mechanisms of internalization are perhaps even more serious. As the philosopher Michael Sandel, for example, argues, markets do more than allocate goods and services; they also importantly express and promote meanings, values, and attitudes toward the goods and services that are exchanged. Through mechanisms of internalization,

7 For the serious problems of the European carbon markets, see, for example, Klein 224–225.

the environment becomes a set of distinct, market-based utilities, the value of which is determined by the egoistic consumer preferences of human individuals. Hence, the philosophical problem is not just that it is technically difficult to establish correct prices through survey methods, for example, and consequently to protect aspects of the environment that have not been assigned proper economic value. The problem is more fundamentally that such methods cannot compute intrinsic values.

I will give an example from my native country, Finland. The current government intends to meet the EU's energy and climate targets with significant investments in bioenergy. Critics of this strategy have pointed out that because it relies on extensive logging it will in fact end up making climate change worse by diminishing the capacity of the existing forests to act as carbon sinks. In the ensuing debate, a recurring argument in favor of the government's strategy has been that it is possible to increase logging without diminishing carbon sinks by cutting old-growth forests and then replacing them with younger, faster-growing forests, which are managed through intensive cultivation systems and which will function more effectively as carbon sinks. Irrespective of whether this claim is true or not, what the example should make clear is that in such a framework, the fact that forests are old and ecologically diverse has no value. Their destruction is not caused by their exclusion from the market mechanisms intended to protect the environment, but rather by their inclusion in them.⁸

When we recognize that the environment and women's reproductive labor occupy analogous positions in the logic of capitalist accumulation, we can identify a parallel shift in neoliberal capitalism's treatment of reproductive labor. This shift corresponds to the recent attempts to commodify the private realm and to turn women into wage-laborers. The rapid neoliberalization of our economies in recent decades has resulted in significant changes in women's traditional role as care providers in the home. We have seen the increasing transformation of the affective and care activities that women used to perform at home into paid services, whether in childcare, domestic help, or health services. In other words, today the reproductive labor of women is not so much externalized from the commodity markets into the private realm and then expropriated for free; it is increasingly internalized into the capitalist markets and exploited as productive labor. This has resulted in new forms of gender oppression, as it is often poor, immigrant women from ethnic minorities who now end up providing the commodified care services. The so-called "global care chains" and the growth in the

⁸ See, for example, Aho. On views contesting the claim that young forests are more effective carbon sinks, see, for example, Ilmasto.org.

trafficking of women have become some of the gendered effects of this development (see, for example, Hochschild).

The emergence of this feminized service economy is also inherently connected to the current “crisis of care”: the lack of sufficient numbers of qualified care-workers who actually care. As feminist economists in particular have pointed out, similar to the case of the environment, care work creates important positive externalities that cannot be fully captured in market transactions. It therefore exposes some of the limits of the commodification of care work from an economic perspective. As economists such as Nancy Folbre and Julie A. Nelson, for example, explain, many people share in the benefit when children are brought up to be responsible, skilled, and loving adults. Employers benefit from skilled and cooperative workers, the elderly benefit if a skilled younger generation of workers generates high taxes, and so on. The problem is that these gains cannot be captured fully by those who created them. Parents, for example, cannot demand a fee from the employers who hire their adult children. This means that, similar to other externalities, those created by care produce an incentive to free-ride, to let others pay the costs. Folbre and Nelson conclude that markets alone cannot solve the current crisis of care: “in the absence of collective coordination less than optimal amounts of care will be provided, because the care providers are not fully compensated for the social value of their services. [. . .] There are limits to the substitutability between family and market provision, limits that our society needs to discuss, define and enforce” (137).

In sum, we can identify two opposing ways to connect capitalist economic logic to the gender division of labor – capitalism wants women both to work and to stay at home – and we can find examples of both incentives today. Capitalism externalizes the costs of reproductive labor by expecting women to take care of their homes for free, as well as internalizing them by creating new markets for care work. Again, similar to the environment, neither option is unproblematic. When reproductive work is not commodified, we have the free-riding problem; when it is turned into paid services, we face the crisis of care.⁹ As I will contend in the conclusion, this suggests that merely attacking neoliberalism in favor of more social-democratic forms of capitalism is not going to solve the problems of gender oppression or environmental devastation in capitalism. The political and economic transformations required have to be more radical and have to contest the core logic of capitalism itself.

9 For individual women this means that they are increasingly torn between the conflicting demands of femininity in neoliberal capitalist societies (Oksala).

The Real Subsumption of Nature

In addition to the mechanisms of internalization prominent in neoliberal capitalism, I contend that the mechanisms of expropriation – the free-riding on nature – have to be complemented by another distinct set of mechanisms for the capitalization of nature. These mechanisms aim to manipulate and intensify biological productivity by rendering (biologically based) natural assets more profitable or malleable for commercial exploitation. Such mechanisms are theorized in an illuminating way as the *real subsumption of nature* in an influential article by Boyd et al. Inspired by Marx's notions of formal and real subsumption of labor, Boyd and his colleagues formulate the concepts *formal* and *real subsumption of nature* to distinguish between two different ways in which capitalism appropriates nature.¹⁰

The formal subsumption of nature corresponds roughly to the mechanisms of expropriation or primitive accumulation discussed above in connection with Mies's work. Under the formal subsumption of nature, capitalist enterprises attempt to gain access to or control over natural resources, but they are “unable to control, intensify, manipulate, or otherwise ‘improve’ upon nature to suit their purposes” (Boyd et al. 562). Capital operates with a logic of extraction and confronts the natural world as a given set of biophysical processes and material characteristics. Despite its obvious benefits, such an approach generally poses obstacles to accumulation, because companies must adjust their production strategies to the exigencies of nature. For example, the dependence on natural production schedules can pose serious challenges to the continuous deployment of labor and machinery. This is why developing mechanisms for the real subsumption of nature becomes essential.

The real subsumption of nature refers to strategies through which capital seeks to intentionally alter biophysical processes to overcome obstacles in production, gain competitive advantage, and increase profitability. The logic of extraction is replaced with a logic that seeks to enhance biological productivity itself. “The desired result [. . .] is higher yields, shorter turnover times, improved disease resistance, etc. Nature, in short, is (re)made to work harder, faster, and better” (564).

¹⁰ By the real subsumption of labor, Marx referred to the way in which capital not only takes over and manages an already existing labor process, but completely transforms its nature and, by extension, the laborers themselves. This idea was essential for exposing the historical transition to a form of capitalism in which surplus value is extracted primarily on the basis of increases in labor productivity rather than through an extension of the working day. See Marx 645; 1019–1038.

A helpful illustration of the difference between formal and real subsumption of nature can again be found in the forestry industry. Whereas early capitalism was characterized by extensive logging of old-growth forests and the ensuing deforestation, today firms and state agencies aim to intervene in the biological basis of forest growth. “Instead of confronting trees as ‘ready-made’ objects, the logic of plantation forestry involves ongoing intervention in and alteration of tree growth processes.” The forestry industry no longer involves simply felling trees and extracting timber; it now includes the use of chemical fertilizers and pesticides, intensive nursery operations for seedling cultivation, hand and mechanical planting of trees, as well as attempts to directly manipulate genetic material (566).

Although the real subsumption of nature by capital is not new, the rapid development of biotechnology has provided unparalleled means for its expansion and intensification. In today’s biocapitalism, biotechnology is understood to be the key for solving the challenges obstructing capitalist accumulation, such as climate change, the end of cheap energy supplies, and an aging population. Whereas in the case of formal subsumption, profitability could be enhanced simply by establishing property rights over natural resources, the real subsumption of nature necessitates the privatization and commodification of biotechnological knowledge rather than of nature itself (564). Complex bioscientific knowledge and technological expertise is required today for the intensification of natural resource productivity.¹¹

If we again examine the parallel developments in the capitalization of women’s reproductive labor, what does the real subsumption of nature signify here? I want to suggest that the emergence of assisted reproductive technologies (ARTs) has transformed the opportunities for the exploitation of women’s reproductive labor due to the ability of these technologies to alter radically the biological process of human reproduction. Women’s biologically reproductive labor has of course never taken place completely outside of capitalist circuits of valorization. The practice of slavebreeding, for example, was employed explicitly as a means of expanding the slaveowners’ wealth and labor force (see, for example, Davis). However, today with ARTs, the biophysical processes of human reproduction can be altered in ways that have made possible the creation of a new kind of global fertility market. It is difficult to provide accurate accounts of its size, but even by careful estimates it is significant. Some estimates put the

¹¹ Kean Birch and David Tylefield argue that the most important property rights in the bioeconomic sector today are those pertaining to the ownership of knowledge assets. The realization of value from immaterial property rights through market exchange is the key issue in the profitability of this sector (316).

size of the global market for transnational surrogacy alone at six billion dollars annually worldwide (Smerdon, qtd. in Mohapatra 147).

ARTs have radically altered the process of human reproduction by completely disengaging reproduction from sex and genetic motherhood from pregnancy. Heterosexual acts of penetration are no longer necessary for biological reproduction because in-vitro fertilization (IVF) and intrauterine insemination (IUI) can lead to conception. The commercialization of these technologies means that if the intended parents are unable to conceive on their own, they can purchase sperm and eggs through intermediaries who control market access to these gametes. Either the intended mother's or donor eggs are fertilized with either the intended father's sperm or donor sperm. If the genetic mother is unable to carry a fetus to full term, it is possible to implant the embryo into the womb of a surrogate mother who will then gestate the fetus to full term. This process is again biotechnologically mediated and increasingly organized through market intermediaries. The commercial clinics will screen and hire the surrogates and prepare their uterine lining for the embryo transfer. This preparation involves lengthy medical procedures and complex drug regimes.¹²

The bodies and reproductive capacities of the women acting as surrogates are thus capitalistically appropriated, but not as external natural resources. Rather, gestational surrogacy can be viewed analogously to the real subsumption of nature by capital: capital is able to take hold of and transform biological reproduction and use it as a source for the creation of new markets and of new forms of capital accumulation. The bodies of the surrogates are effectively produced as exploitable nature and turned into integral components in a sophisticated biotechnological process as well as in the capitalist circuits of valorization. Unlike the reproductive labor of most women, the surrogates' reproductive labor is completely capitalized.

Feminist Ecopolitics Against Capitalism

I contend that feminism can develop its critical perspective today only in the context of global capitalism. The new contours of the relationship between life and politics are intimately tied to the expansion of capitalist accumulation: it is impossible to understand the root causes of the environmental crisis today without a critical analysis of global capitalism, just as it is impossible to understand the

¹² For feminist accounts on transnational commercial gestational surrogacy, see, for example, Pande; Bailey; Vora.

rapid development of life sciences and their application in biotechnologies outside the framework of bio capitalism. Hence, the feminist theorizing that I am advocating here takes the form of a critique of capitalism. It is essential for feminist theory to recognize that there are imperatives that issue from the systemic features of capitalism – its inherent economic logic or laws of motion. At the macro-economic level, they importantly include the overriding goal of capitalist accumulation or the imperative of economic growth, and on the micro-economic level, the imperative of individual enterprises to compete against one another and to maximize their profits in order to survive in this competition. These goals then further explain the imperatives of cheapening labor and expanding markets, the push for constant improvements in the productivity of labor, the innovations in product design, and so on.

Although most theorists of capitalism would agree that these imperatives can be refashioned and take radically different forms depending on the historical, political, and societal context in which they are embedded, they are nevertheless understood as placing distinct constraints on the economic and political activity in societies in which the capitalist mode of production prevails. That is why they have significant explanatory power. Understanding them and their compelling character provides feminist theory with a robust explanatory framework for making sense of a number of political issues, such as the global reproductive market, for example. Surrogacy clinics are not booming in India because of the sunny weather there.

Feminist theory cannot operate with static or totalizing notions of capitalism, however. The analysis of capitalism has to be complex enough to be able to distinguish among different, sometimes contradictory mechanisms that are nevertheless compatible with the underlying logic of capitalist accumulation. By distinguishing between the mechanism of externalization and internalization as well as formal and real subsumption of nature, my aim is to provide a theoretically more nuanced account on the functional analogues between capitalism's appropriation of women's reproductive labor and the productions of nature. My main motive here is essentially political, not theoretical, however. Recognizing the dynamic and contradictory nature of capitalism is politically important because it implies that although some of these mechanisms might appear, in the short term, to be undeniably good for women, the environment, and developing countries, this does not invalidate the fundamental importance of a feminist critique of capitalism.

It should also be evident now why a political alliance between feminism and environmentalism is not just an instance of affinity politics in which separate political goals might, on occasion, be shared. Rather, my key claim is that feminists and environmentalists share a common political goal in their resistance against

capitalism. First, they both share the urgent project of questioning how the line between the processes of market internalization and externalization that I have described above is politically negotiated. As the example of makes clear, a key political issue today is whether different processes of biological life or “nature” are brought within the domain of the markets or whether their appropriate place is considered to be outside of that domain. This has direct consequences for pressing political questions concerning equal access and democratic political control over such processes, but it is also fundamental for the assignment of their moral meaning and value. Just because something can be bio-technically produced, for example, does not mean that it should be sold. Negotiating the limits of commodification is essentially a political project that requires placing limits on the markets on ethical and philosophical grounds.

Second, the real subsumption of nature introduces thorny political questions about risks, rights, and responsibilities. The problem embedded in the real subsumption of nature, including the application of the new biotechnologies, is that such technologies contain unprecedented risks as well as unpredictable environmental and medical outcomes. These risks may include the potential escape and proliferation of novel life forms such as super weeds or virulent strains of viruses and bacteria, or they may materialize as the medical complications resulting from the hyperstimulation of ovaries with hormone shots or the mandatory caesarean delivery of babies. Such serious, life-threatening risks must inevitably raise vexing political questions over who should shoulder these risks and provide compensation when things go wrong. Again, this issue implies a pressing need for political struggles that bring together feminism and environmentalism against biocapitalism.

Third, these two issues – the limits of commodification and the risks in the biophysical manipulation of nature – must open into a still broader and deeper political question. If my analysis is correct, then both feminism and environmentalism should have an interest in challenging the whole economic system that is incapable of recognizing the value of “externalities.” Despite the important development of feminist and environmental economics, these fields of inquiry make apparent their own limits: the environment and women’s reproductive labor have intrinsic value that cannot be fully monetized and internalized into the circuits of a capitalist market economy. This means that they continue to be undervalued and depredated in the capitalist system of commodity exchange. The absurdity of trying to monetize the unmeasurable becomes obvious once we ask ourselves questions such as what is the economic value of the planet or what would you be prepared to pay for the life of your child. Feminist ecopolitics must thus begin from the recognition that we need an economic system in which val-

ues other than profit, consumer preferences, and economic growth have a chance of coming to the fore.

To sum up, in the twenty-first century, feminists no longer have the option of sticking to forms of environmental politics that attempt merely to preserve an external nature somewhere outside capitalist markets. Rather, the goal has to be more radical: they must challenge the capitalist system itself and the multiple mechanisms through which it attempts to absorb life in its value circuits. Traditional socialist demands for the regulation of free markets and for a fairer redistribution of resources will have to be crucial components of the feminist ecopolitics I am envisaging here, but it nevertheless seems clear that such a political project cannot be subsumed into traditional socialist class struggle. An inclusive movement for feminist ecopolitics cannot be built on the ideology of work, economic emancipation, class-struggle, or productivism. The reason for calling capitalism into question today is no longer merely our exploitative social and economic relationships to other human beings, but the immeasurable devastation we are causing to the nonhuman world.

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Kyle Whyte

6 Indigenous Climate Change Studies: Indigenizing Futures, Decolonizing the Anthropocene

Introduction

Indigenous and allied scholars, knowledge keepers, scientists, learners, change-makers, and leaders are creating a field to support Indigenous peoples' capacities to address anthropogenic (human-caused) climate change. Provisionally, I call it *Indigenous climate change studies* (Indigenous studies, for short, in this essay). The studies involve many types of work, including Indigenous climate resiliency plans, such as the Confederated Salish-Kootenai Tribe's *Climate Change Strategic Plan* that includes sections on "Culture" and "Tribal Elder Observations," policy documents, such as the Inuit Petition expressing "the right to be cold," conferences, such as "Climate Changed: Reflections on Our Past, Present and Future Situation," organized by the *Indigenous Peoples Climate Change Working Group*, and numerous declarations and academic papers, from the Mandaluyong Declaration of the Global Conference on Indigenous Women, Climate Change and REDD+ to a special issue of the scientific journal *Climatic Change* devoted to Indigenous peoples in the US context (Maldonado et al.).¹

Indigenous studies often reflect the memories and knowledges that arise from Indigenous peoples' living heritages as societies with stories, lessons, and long histories of having to be well-organized to adapt to seasonal and inter-annual environmental changes. At the same time, our societies have been heavily disrupted by colonialism, capitalism, and industrialization. Regarding Indigenous peoples in the Arctic, Callison writes that climate change is "Understood as an emergent form of life [. . .] climate change presents the need for excavation and reassessment of what a recognition of climate change portends for those who have endured a century of immense cultural, political and environmental changes" (42). Indigenous studies, then, arise from memories, knowledges, histories, and experiences of oppression that differ from many of the nonindigenous

1 REDD+ refers to the United Nations program, Reducing Emissions from Deforestation and Forest Degradation in Developing Countries. See also Harrington; Watt-Cloutier; Shepherd.

scientists, environmentalists, and politicians who are prominent in the framing of the issue of climate change today.

As a Potawatomi scholar-activist working on issues Indigenous people face with the US settler state, I perceive *at least* three key themes reflected across the field that suggest distinct approaches to inquiries into climate change:

1. Anthropogenic (human-caused) climate change is an intensification of environmental change imposed on Indigenous peoples by colonialism.
2. Renewing Indigenous knowledges, such as traditional ecological knowledge, can bring together Indigenous communities to strengthen *their own* self-determined planning for climate change.
3. Indigenous peoples often imagine climate change futures from their perspectives (a) as societies with deep collective histories of having to be well-organized to adapt environmental change *and* (b) as societies who must reckon with the disruptions of historic and ongoing practices of colonialism, capitalism, and industrialization.

In engaging these themes, I will claim, at the end, that Indigenous studies offer critical, decolonizing approaches to how to address climate change. The approaches arise from how our ways of imagining the future guide our present actions.

Back to the Future: Climate Change as Intensified Colonialism

Colonialism refers to a form of domination in which at least one society seeks to exploit some set of benefits believed to be found in the territory of one or more other societies, from farm land to precious minerals to labor. Exploitation can occur through military invasion, slavery, and settlement. Colonialism often paved the way for the expansion of capitalism, or an economic ideology based on wage-labor that prioritizes growth in monetary profits for the owners of assets as the underlying focus, incentive, and purpose of major human social endeavors.

Together, colonialism and capitalism then laid key parts of the groundwork for industrialization and militarization – or carbon-intensive economics – which produce the drivers of anthropogenic climate change, from massive deforestation for commodity agriculture to petrochemical technologies that burn fossil fuels for energy. The colonial invasion that began centuries ago caused anthropogenic environmental changes that rapidly disrupted many Indigenous peoples, including deforestation, pollution, modification of hydrological cycles, and the amplification

of soil-use and terraforming for particular types of farming, grazing, transportation, and residential, commercial and government infrastructure.

Colonially-induced environmental changes altered the ecological conditions that supported Indigenous peoples' cultures, health, economies, and political self-determination. While Indigenous peoples, as any society, have long histories of adapting to change, colonialism caused changes at such a rapid pace that many Indigenous peoples became vulnerable to harms, from health problems related to new diets to erosion of their cultures to the destruction of Indigenous diplomacy, to which they were not as susceptible prior to colonization. Indigenous peoples often understand their vulnerability to climate change as an intensification of colonially-induced environmental changes.

Scientific syntheses, including the US National Climate Assessment and Intergovernmental Panel on Climate Change Fifth Assessment reports, provide evidence that anthropogenic climate change affects Indigenous peoples earlier and more severely than other populations. Indigenous peoples, for example, are already among the first "climate refugees" in regions such as the Arctic or Pacific where sea-level rise is occurring (Maldonado et al.). Climate change affects the integrity of Indigenous cultures and economies as the habitats change for species such as salmon that are important to Indigenous cultures, health, and economies (Norton-Smith et al.).

Shifting habitats and climate-induced displacement have implications for Indigenous self-determination. They can offset agreements with nations over designated harvesting areas, such as treaties, that are difficult to renegotiate with more powerful nation-state parties who are heavily influenced by corporations and constituencies of citizens who are largely ignorant about Indigenous peoples. Or they can throw Indigenous peoples into bureaucratic processes of emergency management in which Indigenous peoples' voices are silenced by states, corporations, and local governments (Grossman and Parker; Abate and Kronk; Shearer).

Indigenous scholars discuss climate vulnerability as an intensification or intensified episode of colonialism. Wildcat claims that Indigenous climate relocation today is part of three removals occurring as part of US colonial, capitalist, and industrial expansion. The first two removals were "geographic" (displacement, e.g. Trail of Tears and the forced occupation of reservations), and "social" and "psycho-cultural" (such as through removal of children to boarding schools). Now,

As ice sheets and glaciers melt permafrost thaws, and seacoasts and riverbanks erode in the near and circumpolar arctic, peoples indigenous to these places will be forced to move, not as a result of something their Native lifeways produced, but because the most technologically advanced societies on the planet have built their modern lifestyles on a carbon energy foundation [. . .]. (Wildcat 4)

For Wildcat, the *immediacy* of climate refugees is like the experience of *déjà vu* given that relocation and displacement are part of the history of colonially-induced environmental changes that harmed Indigenous peoples. Hence scholars such as Kimmerer can claim that, “Once again, we are in a situation of forced climate change adaptation” (“Climate Change”).

Colonially-driven environmental change destroyed ecosystems on which Indigenous peoples relied, boxed Indigenous peoples into small reservations that were fractions of their original territories, or simply displaced Indigenous peoples from their homelands to new ecosystems. Boarding schools forced Indigenous peoples to adopt English as their primary language, thereby erasing the knowledges encoded within their own languages about how to live in relation to certain ecological conditions; Indigenous students had to adopt heterosexual and patriarchal gender norms that demoralized and disenfranchised Indigenous girls, women and two-spirit persons. The US forced Indigenous peoples to take on corporate government structures that incentivized Tribal government leaders to depend on and buy into extractive industries and other capitalist enterprises (today, gaming is one of them but so is the coal industry).

Through each of these practices of colonialism, Indigenous peoples witnessed the away-migration of their nonhuman relatives. Kimmerer writes that “Like the displaced farmers of Bangladesh fleeing rising sea levels, maples will become climate refugees. To survive they must migrate northward to find homes at the boreal fringe. Our energy policy is forcing them to leave. They will be exiled from their homelands for the price of cheap gas” (*Braiding Sweetgrass* 173). Mastnak et al. see colonialism “as the literal planting and displanting of peoples, animals, and plants – as inscribing a domination into blood and soil [. . .]” (367). Away-migration also occurs in a “psycho-cultural” sense, as Wildcat calls it, when people lose customs, protocols, skill sets, and identities (e.g. animal clan identities in some Tribes) related to particular plants, animals, insects, and ecosystems.

Indigenous studies, then, seek to understand vulnerability to climate change as an intensification of colonialism. Chief, in work spanning several collaborations she is part of, analyzes the Pyramid Lake Paiute Tribe’s (PLPT) vulnerability to climate stressors in relation to their identities as *Kuyuidokado/Kooyooee Tukadu*, or cui-ui (fish) eaters whose relationship to the fish has been eroded, on a cyclical, though intensified, basis, by the Derby Dam built some 100 years ago, high demand for water by settlers, and settler-caused environmental changes that exacerbate droughts (Chief et al.). So, climate change is related to settlement, and it is the actions of settlement that opened up PLPT territories for the development of cities such as Reno, Nevada.

Marino and Maldonado discuss how climate change is an intensification of colonialism which opened up territories for settlements and forced some Indige-

nous peoples to relocate. Marino, working with the *Kigiqitamiut* people in the Village of Shishmaref, Alaska, writes that “Previous flexibility to environmental shifts and unexpected hazards allowed the community to adapt to abrupt changes.” Yet now a colonially-driven “relatively immobile infrastructure and development requires people to stay in place in order to carry out their daily lives (374). Maldonado shows the vulnerability to sea level rise that is forcing the displacement of the Isle de Jean Charles Band of Biloxi-Chitimacha-Choctaw Indians arises from a number of colonial factors tied to energy and agriculture including dredging canals, cutting oil and gas pipelines, constructing dikes and levees, damming the Mississippi river, and large agricultural developments.

The intensified *déjà vu* experience of climate change engages some of the most critical issues Indigenous peoples face today, gender being one of them. Climate change impacts affect Indigenous women more acutely, in many cases, while colonial policies for addressing climate change devalue the leadership of Indigenous women (Vinyeta et al.). Moreover, Sweet claims that that “With warming temperatures and melting ice comes greater accessibility to the [Arctic] region, leading to more outside influences and more potential human security threats,” including sex trafficking. Oil production fields, such as the Bakken production field in North Dakota, form “man camps” for laborers that attract violent sex trafficking of Indigenous persons (Deer). Of course, as a large literature in Indigenous gender studies shows, colonial domination and gender violence/oppression are of a piece (Goeman and Denetdale). Climate change, then, is both a gendered form of colonially imposed environmental change, and another intensified episode of colonialism that opens up Indigenous territories for capitalism and industrialization that occurs through gender violence.

In the studies just referenced, Indigenous persons and allies examine climate change less as a future trend, and more as the experience of going *back to the future*. For anthropogenic climate change is an intensified repetition of anthropogenic environmental change inflicted on Indigenous peoples via colonial practices that facilitated capitalist industrial expansion. The same colonial practices and policies that opened up Indigenous territories for deforestation and extractive industries are the ones that make adaptation difficult for Indigenous peoples today.

Anthropogenic climate change makes Indigenous territories more accessible and Indigenous peoples more vulnerable to harm, just as did laws, policies, boarding schools, and the like in previous episodes of colonization. A rising number of scholars, such as Cameron, Stuhl, Haalbloom and Natcher, are adamant that the analysis of Indigenous climate vulnerability cannot occur in the absence of the history and present practices of colonialism and capitalism in Indigenous homelands.

Renewing Relatives: Indigenous Knowledges and Climate Change

Indigenous knowledges, in the simplest terms, refer to systems of monitoring, recording, communicating, and learning about the relationships among humans, nonhuman plants and animals, and ecosystems that are required for any society to survive and flourish in particular ecosystems which are subject to perturbations of various kinds. Indigenous knowledges range from how ecological information is encoded in words and grammars of Indigenous languages, to protocols of mentorship of elders and youth, to kin-based and spiritual relationships with plants and animals, to memories of environmental change used to draw lessons about how to adapt to similar changes in the future. Indigenous peoples see their knowledges as containing important insights about how to negotiate today's environmental issues; they often see the renewal of their knowledge systems as a significant strategy for achieving successful adaptation planning.

Sakakabira, in her work with Iñupiat communities in the arctic, discusses how people live according to relationships of moral reciprocity with whales, an animal they depend on economically, culturally, and for health. The connection is so intimate that Sakakabira calls it “cetaceousnes” (whale-consciousness) (see also Colombi; Chisholm Hatfield; Blanchard; Nelson). While Iñupiat whale knowledge provides practical information on whale lifecycles that facilitate hunting and other practices that secure human benefits from whales, the knowledge also brings people together to respond to climate change. For example, climate change is experienced through changes in the availability of the whale tissue used for traditional drum membranes. Whereas historically drum ceremonies expressed the whales' invitations to bring people together, climate induced disruptions in whale cycles have been associated with a resurgence in drumming ceremonies in some communities. The ceremonies now express humans' invitation for whales to come back to reciprocal relations (with humans) (Sakakibara).

Norgaard et al. seek to renew Karuk knowledge, especially burning practices, as a basis for bringing the community members together to address climate change today – a goal they call “knowledge sovereignty.” They view “climate change as a strategic opportunity not only for Tribes to retain cultural practices and return traditional management practices to the landscape, but for all land managers to remedy inappropriate ecological actions, and for enhanced and successful collaboration in the face of collective survival.” Through rekindling traditional burning connected to many human, plant, fish, and animal interactions, the Karuk climate change strategy renews Karuk knowledge to convene the com-

munity members themselves and improve the basis for collaborating with nonindigenous parties.

The St. Regis Mohawk Change Plan, spurred by the leadership of Arquette and Benedict, is organized entirely from the human relationships with plants, animals, spiritual beings, and ecosystems of their Thanksgiving Address and that are part of Mohawk knowledge of how to be good environmental stewards. The plan's sections are divided into "The People, Mother Earth, The Waters, The Fish, Small Plants and Grasses, The Berries, Three Sisters, Medicine Herbs, Animals, Trees, The Birds, The Four Winds, The Thunderers, Grandmother Moon, The Sun, the Starts, the Four Beings, the Creator" (St. Regis Mohawk Environmental Division). Each section in the vulnerability analysis begins with a story and a description of the cultural and historical significance of the relationships, followed by comparisons between observed changes and scientific information about climate change. Solutions to climate adaption in the report involve the continued renewal of the relationships, whether through education or stewardship practices, to mobilize community members to take action to address climate change.

In McNeeley's work with Koyukon people of Koyukuk-Middle Yukon region in the Arctic, one of the issues was that the state of Alaska, in order to cope with the consequences of climate change, was imposing hunting regulations on moose that would restrict Indigenous subsistence harvesting. The collaborators constructed, using Koyukon knowledge of their seasonal round, a seasonal wheel that shows *their* understanding of seasonality. The seasonal round original sketch was hand drawn by a Koyukon youth after a community focus group. Subsequently, different iterations were reviewed by elders and community members. The seasonal wheel, which illustrates numerous human relationships, terrestrial and aquatic plants and animals, and technologies, demonstrates that shifting the moose hunting season later so as to correspond with the Indigenous view of seasonality makes more sense than the date proposed by state and federal regulators (McNeeley and Shulski; McNeeley).

Renewing Indigenous knowledges can bring together Indigenous communities to strengthen their self-determined planning for climate change. In the cases just described renewing knowledges involved renewing relationships with humans and nonhumans and restoring reciprocity among the relatives (i.e. the parties to the relationships). I call this process *renewing relatives*, as it involves both restoring persisting relationships that are part of longstanding Indigenous heritages but also creating new relationships that support Indigenous peoples' mobilizing to address climate change. While Indigenous knowledges obviously have useful information about the nature of ecological changes, it is perhaps more interesting to explore how renewing Indigenous knowledges serves the motivation of people and communities to address climate change.

Of course, many Indigenous persons are understandably concerned that climate scientists will intentionally or naively clamor around Indigenous communities to exploit the information Indigenous knowledges might possess that could fill in gaps in climate science research. Williams and Hardison and Cochran have been a part of work designed to improve ethical policies and practices for bridging epistemic, power and privilege, cultural, and political differences that scientists often are not trained to understand. Yet as Hardison and Williams show, the more scientists understand the significance of the practice and renewal of Indigenous knowledges for Indigenous peoples' own purposes of preparing for climate change and protecting their ways of life – sometimes called the governance value of Indigenous knowledges (Climate and Traditional Knowledges Workgroup) – the more scientists will grasp richer senses of their responsibilities to work with Indigenous collaborators mutually instead of exploitatively (Williams and Hardison; Cochran).

Indigenizing Futures

The *First Alaskan's Institute*, an Indigenous organization, includes as one of its slogans, “progress for the *next* 10,000 years,” referring to Indigenous Alaskans' own histories of living in that region for that long. Since Indigenous peoples in North America think at this scale, the time period of European, US, and Canadian colonialism, imperialism, and settlement appears very short and acutely disruptive. Indigenous conceptions of the future often present striking contrasts between deep Indigenous histories and the brief, but highly disruptive colonial, capitalist, and industrial periods. Moreover, many Indigenous histories are explicit about the fact that Indigenous peoples, as collective actors, have also influenced local and regional environments. Many peoples' calendars and seasonal rounds explicitly demonstrate how Indigenous peoples, through practices such as burning and fishing, managed and maintained certain ecosystems. These ecosystems also changed through human interventions such as regional trading.

A term like “anthropogenic” has very diverse meanings for Indigenous peoples, from gradual changes, such as the adoption of new “relatives” (e.g. adoption of the horse in North America) to the shaping of habitats for certain plants and animals, to disruptive settler colonialism, such as practiced by Europeans arriving in North America. “Anthropogenic climate change” or “the Anthropocene,” then, are not precise enough terms for many Indigenous peoples, because they sound like all humans are implicated in and affected by colonialism, capitalism and industrialization in the same ways (Schulz).

Davis and Todd argue that the Anthropocene is rooted in colonization. For colonialism has always included terraforming that tears apart what they call, following Watts, the “flesh” of human-nonhuman-ecological relationships. That colonizers today, from settlers to imperialists, are concerned about climate change, suggests that they are now being affected by the seismic waves of massive ecosystem transformation that began over 500 years ago (Davis and Todd). Mitchell cautions against “marking European colonization as a driving force of the Anthropocene,” because doing so may “naturalize” colonization. That is, the “risk of equating human forms of agency with ‘natural forces’ is that they come to be seen as inevitable, determinate and less contestable than ‘political forces’.” Mitchell points out that “the Anthropocene is not the product of ‘humanity’, but rather particular segments of it”.

As Indigenous peoples, we do not tell our futures beginning from the position of concern with the Anthropocene as a hitherto unanticipated vision of human intervention, which involves mass extinctions and the disappearance of certain ecosystems. For the colonial period already rendered comparable outcomes that cost Indigenous peoples their reciprocal relationships with thousands of plants, animals, and ecosystems – most of which are not coming back. As Gross claims, “Native Americans have seen the end of their respective worlds [. . .] Just as importantly, though, Indians survived the apocalypse. This raises the further question, then, of what happens to a society that has gone through an apocalyptic event?” (33).

Some answers to Gross’ question lie in the work of Indigenous Climate Change Studies described already in this essay. Indigenous imaginations of our futures in relation to climate change – the stuff of didactic science fiction – begin already with our living today in post-apocalyptic situation. Had someone told our ancestors a story of what today’s times are like for Indigenous peoples, our ancestors would surely have thought they were hearing dystopian tales. For Indigenous peoples live in worlds so changed by colonialism, capitalism, and industrialization that our collective self-determination and agency are compromised to a degree our ancestors would have been haunted by. Indigenizing our futures involves our reflecting on why our ancestors would have thought today’s times are dystopian.

In our case, reflecting on why our ancestors would have perceived the present as dystopian provides guidance on how to live under post-apocalyptic conditions. The Menominee Nation’s recent development of culturally, spiritually, and economically significant sustainable forest was actually their response to the colonially-induced destruction of their relationships with many species. The transition to forestry involved envisioning and performing certain relationships and responsibilities that would have mattered to their ancestors – just now in relation

to forest biodiversity. The Menominee's relationships to the forest motivates their ongoing leadership in addressing climate change (Whyte et al.). Indigenous climate justice activism is also about performing these ancestrally inspired visions (Fiskio), including the recent insistence by some leaders of the Standing Rock Sioux Tribe that their resistance to the Dakota Access Pipeline is primarily about prayer, ceremony, honoring their ancestors, and renewing their reciprocal responsibilities with water (Dhillon and Estes).

Indigenous climate change studies perform futurities that Indigenous persons can build on in generations to come. That is, our actions today are cyclical performances; they are guided by our reflection on our ancestors' perspectives *and* on our desire to be good ancestors ourselves to future generations. Wildcat calls this performance "indigenuity;" Kimmerer, "returning the gift" (if we think broadly, in a multigenerational sense, about what Kimmerer means, here). So for Indigenous peoples, "the Anthropocene epoch," as a concept some people invoke often to envision the future, does not present us, at first glance, with the specter of unprecedented changes. Indigenous Climate Change Studies is a field that opens up our interpretations of our own histories and futurities, with the goal of supporting Indigenous capacities to address climate change and the continuance of flourishing future generations.

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Sarah E. Vaughn

7 The Aesthetics and Multiple Origin Stories of Climate Activism

What is climate activism? Often the image that comes to mind is a group of people protesting with placards that express their grief and anger about government inaction to reduce carbon emissions. Their protests are often supported by the actions of an individual, such as Greta Thunberg, intent on demonstrating to a broader public the ways carbon consumption destroys human life. Through these forms of collective and individual climate activism, people disclose information about the state of the world. This disclosure is shaped by a common understanding of space, time and activities that make climate change a reality. Yet the extent to which climate activism mobilizes some sort of change also depends on the stories people tell. In this short essay, I argue that ethnographic attention to storytelling is central to anthropology invested in critical analyses and theory of climate activism. In particular, I focus on the way visual images can mobilize a particular kind of storytelling about climate adaptation, and the future of climate activism as a more inclusive project.

The use of visual images to mobilize environmental causes and movements is nothing new. The paintings of ornithologist James Audubon and the landscape photographs of Ansel Adams have been deployed for decades to spur civic interest in conservation. In the realm of climate activism, however, the opposite narrative strategy has emerged. Images of melting glaciers, dense smog and raging wildfire's structure climate activism as a project focused on making visible blind spots in human thinking (Petryna). Likewise, color-coded maps of tipping points are important tools that the United Nations and the Intergovernmental Panel on Climate Change have used to communicate to lay and activist publics about the power of climate change to transform the earth (Liverman). There is thus an aesthetics at the core of climate activism. This aesthetics is related to what political philosopher Jacques Ranciere calls the "distribution of the sensible" (8). For Ranciere, artistic activities intervene on the normative ways of doing, making and seeing things in the world. By relying on visual mediums, climate activism intervenes on civic and political life to remind the world of climate change's staggered, and often times invisible, impacts on the everyday. Even still, as I see it, much of this intervention has failed to galvanize a relationship to not only human decision-making but human adaptation to climate change.

This omission is more than an issue of audience or even ideology, but rather of inclusion. It reinforces the perspective that the expertise for climate activism

emanates from the global North, or places where people appear to confront fewer climate-related dangers. In turn, people in the global South, where climate adaptation has been integrated much longer into post-developmentalism policies, are positioned as marginal to the aesthetics of climate activism. For instance, in my field site, Guyana, I have never heard anyone use the phrase “climate activism”. I have, however, encountered many films and photographs, and write about their daily efforts engineering embankments and conserving mangroves to enhance, and in some cases reimagine, state-sponsored climate adaptation activities. This is not to say that in Guyana climate activism does not exist nor that it is a locale untouched by the concerns of climate activists elsewhere. The inter-Caribbean climate change awareness campaign “1.5 to stay alive” adopted by United Nations programs, national governments, NGOs, artists and activists alike, proves otherwise. Climate activism, in other words, has multiple origin stories.

There are numerous popular artworks already in circulation that help us see this variation, by pushing at the aesthetic boundaries of climate activism. Spike Lee’s 2006 documentary *When the Levees Broke: A Requiem in Four Acts* is one example. It provides a platform for residents, state officials, engineers and political leaders from the New Orleans area to give first-hand accounts of Hurricane Katrina. Lee uses the trope of bearing witness to reflect on black deaths from the perspective of a multiracial community under siege by floodwaters and a broken political system. While the plot centers on disaster, Lee offers more by weaving together images of hurricane-ravaged landscapes with the sounds of jazz funerals and second line parades to depict a roadmap forward for the city’s potential renewal. He directed a subsequent documentary that outlines the city’s and residents’ struggles to rebuild and adapt to climate change. A film of the same period, Benh Zeitlin’s 2012, *Beasts of the Southern Wild*, presents a magical realist account of a bayou community living on the edge of swamps and oil refineries. The reference to the Louisiana Delta is obvious but striking in its depiction of a place constituted by displaced people and kin. As folklore, the film describes the force of nature in undermining normative political worlds structured by race-thinking and development. In short, the value of these films is in their capacity to depict a present history of climate activism and the unexpected sources of its movement.

In tracing this present history of climate activism, anthropology could gain a lot from considering and analyzing artworks of previous eras. The abstract expressionist paintings of Guyanese-British artist Frank Bowling are one such resource. His 1969–1971 series *Map Paintings* are stenciled maps that depict continental landmasses that are off-centered and out of proportion compared with realist renderings of political maps. Many art historians argue that the series references themes of decolonization and the dramatic evolution of migration between the Old World and New World that began with the transatlantic slave

trade. Importantly, Bowling created the series not only in response to decolonization but in the moment of what Shelia Jasanoff pinpoints as the emergence of “earthly politics”. In this moment, the image of the earth captured by the Apollo moon landing missions helped galvanize environmental movements and causes. Bowling’s paintings offer a perspective on the blurred geographies that are internal to, but erased by, this scientized vision of planet earth. And this erasure continues to materialize today as uneven political efforts and commitments to climate adaptation the world over.

The goal of climate activism is therefore to tell the story about the connections between the local and planetary effects of climate change on people. Ethnography of its narrative devices and visual images helps get after the struggles and sometimes missed opportunities in making these connections possible. Such analyses are only more critical in a moment when what looks and feels like climate in-action has been recalibrated by unanticipated risks such as pandemics. While early Covid-19 travel bans and quarantines provided a well of antidotes and images of “nature coming back and recolonizing human environs”, they also revealed the systematic ways in which climate activism is linked to health, food and housing activism. How and if the image of the mass crowd will continue to stand-in as the hallmark image of climate activism remains to be seen. The political potential of climate activism may therefore be in its capacity to tell stories that emphasize those earthly politics and its gatherings, once seemingly on the fringe but central to its future.

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Blanche Verlie and Astrida Neimanis

8 Breathing Climate Crises: Feminist Environmental Humanities and More-than-Human Witnessing

Introduction

In May 2022, thousands of Iraqis were hospitalized with respiratory ailments due to climate-change-intensified dust storms. Meanwhile, people in Delhi struggled to breathe due to the toxic smoke from landfills that had spontaneously combusted amidst a severe heatwave – a newsworthy event layered atop the slow violence of everyday air pollution caused largely by the combustion of fossil fuels. Heat makes air pollution worse and makes it harder for the body to manage it. These events came in the wake of disastrous flooding in Australia, where residents of towns like Lismore cut holes in their ceilings to escape drowning in the rapidly rising extreme floodwaters. One woman interviewed recalled having panic attacks on her roof as she waited with her human and canine family to be rescued by neighbors. Returning home, people in flooded communities speak of the stench of mud and face the respiratory challenge of the aftermath of floods: mold. Such examples speak to the diversity of physiological and psychological ways in which climate change inhibits breath, including the ways this is compounded and amplified through the multiple stages of climate change: ongoing fossil fuel combustion, the consequent climate disasters, and human awareness of and concern about climate change. Of course, in each of these examples, it is not only human bodies that are suffocating, although the respiratory challenges facing our multispecies kin rarely make the news.

In this paper, we consider breath as a mode of more-than-human witnessing of climate catastrophe. Breath is a form of witnessing that is unavoidably embodied and personal, yet it affords a relational, if always limited, ability to understand the climatic experiences of other beings, human and not. Building on feminist theorizations of the climate crisis as a “transcorporeal” (Alaimo) body-climate entanglement (Neimanis and Walker; Tuana; Verlie, “Rethinking Climate Education”), and on practices of situated drawing on situated knowledges (Haraway, “Situated Knowledges”; Harding), we expand and challenge notions of witnessing by emphasizing that to breathe climate catastrophe is to witness one’s own body-in-and-as-part-of-the-climate. Put otherwise: we are the climate change we witness.

We begin with a discussion of how witnessing is theorized and practiced in the environmental humanities, exploring how it is often enacted as deeply personal, place-based, intimate bodily entanglement with (and as) other bodies and unique local environments. These methodologies of “attunement” encourage detailed, multi-sensory, and self-reflective modes of knowing through close relationality. Such situated methodologies protect against the tyranny of universalism and afford attention to the porosity and complex ontologies that blur any distinct separation between humans and their wider worlds. Through these practices, we learn to tune into the lived experiences of climate change, where the “who” and “what” of witnessing becomes ambiguous. Nevertheless, we are also troubled by these methods’ frequent focus on individual encounters, how they sometimes struggle to reveal climate change’s inextricable social and cultural causes and manifestations and can fall short of a critical systemic analysis.

We then turn to review recent literature on breath, much of which has been inspired by the COVID-19 pandemic and the Black Lives Matter movement. In this section, we consider the multiple, intersecting, and compounding modes through which climate change suffocates living bodies (human and not) and argue that climate change is creating a systemic crisis of respiration. We offer this in-depth examination of breath and climate change to underscore why witnessing climate change must engage both the intimate and the systemic, the familiar and the different, the human and the more-than-human. Breath as a practice of witnessing climate catastrophe articulates us as part of, but not the entirety of, the climate crisis: we are both the witness and the witnessed, the human and the meteorological, but at the same time, we are not fully any of these. We thus argue that although personal experience offers an important, indeed, crucial, element for more-than-human witnessing of climate change, to gain a holistic understanding of the grand scales and diverse manifestations of climate catastrophe, we will need the “proxy stories” and epistemic “prostheses” of climate science, medical data, artistic and poetic renderings, as well as critical environmental and multi-species justice theorizing.

In the final section, we thus propose a “conspiratorial” witnessing that attempts to hold these complexities together. This feminist, more-than-human witnessing emerges from practices of conspiracy – breathing together. We are all breathing the climate crisis together, although differently, according to our different forms of embodiment, our different sociopolitical situations, and our different historical-geographical locations. We know of this shared-but-differentiated suffering through our personal embodied attunements, as well as through the prosthetics of scientific knowledge and critical social analysis. We breathe together to survive, to empathize where possible, to recognize incommensurate suffering, to connect and entangle with others through shared breathing, and to create knowl-

edges and responsibilities for breathing new worlds into life. Conspiratorial witnessing is, therefore, a breathy practice of collective action for climate justice.

Embodied Attunement in the Environmental Humanities as Entangled, Situated Witnessing

Alongside its well-known discussion within trauma studies, the phenomenon of witnessing has emerged as a critical concept within the environmental humanities – a field which is concerned with “the vexed and vexing ways in which culture is always co-imbricated with nature” (Hamilton and Neimanis, “Five Desires, Five Demands” 387). With a particular focus on imagination, values, affect, power, and aesthetics, the environmental humanities seek to counter the “increasingly atomized science-based responses to environmental dilemmas,” and analyze the ways in which a dichotomized understanding of nature and culture in fact underpins various forms of “colonialism, militarism, globalism, extractivism, and erasure” (O’Gorman et al. 427). Indeed, critical strains of environmental humanities research (Davis and Todd; Hamilton et al.) emphasize that climate change and environmental devastation can be understood as *symptoms and outcomes* of violences wrought by intrahuman systems of power such as heteropatriarchy, capitalism, colonialism, and speciesism.

Methodologies within the environmental humanities are diverse, yet one hallmark, articulated by well-known scholars such as Anna Tsing and Deborah Bird Rose, centers “immersive approaches” and their focus on attention and attunement to more-than-human, or non-human, worlds. From practices described as “field philosophy” (Buchanan et al.), “the arts of attentiveness” or “attunement” (Van Dooren et al.), to “posthuman phenomenology” (Neimanis, *Bodies of Water*), these environmental humanities methods situate research “in the field,” “thus instilling a more experiential and lived form of education” (Buchanan et al. 384). Rather than learning at a distance, the sensorium of researchers’ bodies is called on to directly engage with, register, analyze, and make sense of the phenomena they study.

According to these signature environmental humanities methods, to understand more-than-human worlds is, in a word, to *witness* them: to be with, be for, and be changed by them. These methodologies align with certain components of how witnessing is conceptualized within other sociocultural theories of this phenomenon – such as the everydayness of witnessing (e.g. Abrams and Kacandes), its affective or emotional dimensions (e.g. Zembylas; Appelbaum), and the responsibilities that witnessing elicits (e.g. Butler). One specific contribution of attune-

ment methodologies as witnessing within environmental humanities, however, is their privileging of ontological entanglement, whereby the witness of environment, nature, or place is never separable from the phenomena they witness. Indeed, the ambit of many of these methods is precisely to enact this ontological blurring: it is through a deliberate process of attunement to the non-human worlds that we discover our own inseparability from them. “Nature” is not “out there”; we are rather inescapably in it and of it. One particularly notable example here is the work of Deborah Bird Rose, who claims that to witness is “to be called into connection.” For Rose, witnessing is a form of active listening that bridges distance across difference.

While environmental humanities methods as witnessing famously find pathways of connection between humans and mushrooms, flying foxes, frogs, crows, and other non-humans, we are particularly interested in feminist methods that are concerned with the atmospheric and meteorological. Such approaches offer to help bring the diffuse and grandly scaled phenomenon of climate change “home,” precisely through embodied attunement methodologies. For example, Nancy Tuana proposed that “witnessing [Hurricane] Katrina” included witnessing ourselves within “interactionist ontologies” of nature and culture. Inspired in part by Tuana, Neimanis and Walker drew on their bodies’ own sensorial experiences in/as the weather world to try to make sense of the “thick time of climate change,” archived as much in our bodies as in the earth, sky, and oceans. In this change, climate change *is* us. More recently, Stephanie Erev has written that the grand disruptions of climate change can “make themselves felt on visceral registers of being” and that “attunement to [these] strange bodily feelings” can function as a “micropolitical” practice (848).

This work aligns with feminist environmental humanities scholars who suggest that attunement practices that call up bodily knowledges can help us witness climate change (see Hamilton and Neimanis, “Field Guide”; Neimanis, “Weather Writing”; Springgay and Truman; Verlie, *Learning to Live*). Bringing these positions together, we find a loose amalgam of feminist environmental humanities methods for attuning to climate change that suggest, first, that these can do the work of witnessing, but second, that through this witnessing we must face the fragility of any firm distinction between a human witness and the climate change she/they witnesses. To witness ecologies is always also in part to witness ourselves; or conversely, as witnesses, we are always also more-than-human or post-human. Again: we *are* the climate change we witness.

These feminist environmental humanities contributions are significant in terms of ontological understandings of witnessing, but they are also epistemologically significant. To elaborate, we turn to another key environmental humanities figure, Donna Haraway. In her essay “Situated Knowledges: The Science Question

in *Feminism and the Privilege of Partial Perspective*” (1988), whose insights were then elaborated in the 1997 book *Modest_Witness@Second_Millennium. Female-Man©_Meets_OncoMouse™: Feminism and Technoscience*, Haraway argues for “feminist objectivity” – namely, a kind of knowledge that articulates the world with the knower’s own socio-political-ecological-historical situation. This “situated knowledge” is no less rigorous or “true” than positivist scientific objectivity; rather, it is *more* valid since it explicitly accounts for the situation of the knower (human or frog? child or adult? artist or plumber? Anishinaabe or Gadigal?) as contributing to what is known and thus clarifies the partiality of all knowledge.

The idea of a situated knower is key for environmental humanities witnessing/attunement practices. Haraway’s modest witness rejects the technoscientific myth of universal and disembodied knowledge that emerged in the West in the seventeenth century. Modest witnessing “is about a kind of immersion in the world [. . .] where you ask a hard intersection of questions about race, class, gender, sex, with the goal of making a difference in the real, ‘material-semiotic’ world” (159). The modest witness “stand[s] publicly accountable for, and psychically vulnerable to, one’s visions and representations” (155). This epistemological insistence on political situatedness thus further contours the idea of the more-than-human, or posthuman, witness of climate change under discussion here. Even as we are always also the climate change, we witness, how we are situated affects *what* we witness. To take this to its logical conclusion: what we witness in our immersive, embodied attunements is itself a multivalent, complex, politically stratified process. There is no *one* climate change, just as there is no omniscient witness of climate change.

This resistance to positivistic universal truth claims is ethically significant, but it also raises the question of the limits of environmental humanities methods for witnessing/attuning to climate change. Situated knowledge calls for the non-universalizability of experience. Yet, when practiced as individuals, we open to the more-than-humanness of the phenomenon that is also us, but in so doing occlude and even suppress a diversity of experiences and thus many of the myriad ways that climate change manifests. As Hamilton and Neimanis argue in the context of their intersectionally informed concept of “weathering,” even though weathering includes embodied and sensory attention to how “the climate is us,” a fulsome understanding of climate change also demands “an analysis of structural and systemic violence as essential to thinking through life in a changing climate” (“Weathering” 83).

For example, multispecies environmental humanities scholars are asking questions such as “How do colonialism, capitalism, and their associated unequal power relations play out within a broader web of life?” and seeking answers “through immersing themselves in the lives of fungi, microorganisms, animals,

and plants” (Van Dooren et al. 3). However, it is unclear whether this intimate immersion in the worlds of these multispecies others can address these bigger questions relating to the colonial and capitalist systems that condition their lives (Verlie, “Climate Justice”). As feminist, decolonial, and disability justice scholars have pointed out, these methods are rife with assumptions about what bodies can do, how bodies can know, the nature of the relationship between bodies and places, and how colonial gendered, racialized, and otherwise structural experiences and histories that weather each of these bodies differently will come into play in the process of attuning (Kafer; Neimanis, *Bodies of Water*; Watts). While partially related to the structural formation of environmental humanities as a field, which emerges primarily in the context of white, male Western scholars (Hamilton and Neimanis, “Composting Feminisms”), this insufficient attention to these larger systems of power that condition and *make* climate change also relates to the limits of embodied attunement as an individualized practice. Thus, we question whether embodied attunement is *sufficient* to deepen an embodied understanding of climate change’s historical, political, and ethical imbrications in capitalist colonial heteropatriarchy – for instance, the factors and phenomena that are its conditions of possibility, and that, importantly, manifest very differently for bodies shaped by race, class, gender, sexuality, ability, and geographic location.

We therefore argue that attunement methodologies need bolstering with additional forms of witnessing. Embodied attunement can draw attention to the ontological blur between witnesser and witnessed, thus inaugurating new and valuable understandings of both what climate change is (a transcorporeal, multi-scalar, multispecies, and multi-elemental phenomenon) and where it manifests (in our bodies and the world, but most accurately in their ineluctable co-constitution). But these relational entanglements also remind us that we must acknowledge the “not-I” (see Boscacci): what is different from us, what we cannot know, what is beyond us. Methods of attunement do not necessarily invite these observations and can risk re-centering the individual knower. The “arts of attention” need to always be complemented and thickened through explicit augmentation with the collective and more-than-individual “proxy stories” of science, art, literature, personal narrative, historical testimony, critical theory, and other sources of information. Through this “syncretic assemblage” of knowledge (Alaimo), we are able to “think in the presence of others” as well (Stengers), not only being accountable for the non-generalizability of our own embodied attunements, but also prompting a duly complex and capacious understanding of the phenomenon that we are/bear witness to. In the next section, we explore the multivalent ways that climate change implicates breath and breathing, in order to argue for a “conspiratorial” form of feminist, embodied, more-than-human witnessing that can

both attend to crucial differences while acknowledging common atmospheres in the final section.

Climate Catastrophe as Systemic Multispecies Suffocation

We write this in the early 2020s, a decade so far characterized by multiple interrelated systemic respiratory injustices: not only escalating climate change, but also the COVID-19 pandemic and racist police violence, encapsulated in Black Lives Matter's refrain "I can't breathe" (Hardeman et al.; Habtom and Scribe; Reading). The convergence of capitalism, settler colonialism, mass extinction, heteropatriarchy, ableism, and climate catastrophe is becoming ever more apparent (Chen), and "all these wars on life begin by taking away breath" (Mbembe). This decade "roars with so many multiple, overlapping, resonating, and yet incommensurate" breakdowns in livable air-body relations (Choy, "Commentary" 586). Of course, marginalized communities have long-running practices of breathing through the suffocating conditions they have been subjected to (Tremblay; Fanon; Sharpe), but these "roars" are now becoming evident even to the privileged who used to be able to breathe (more) easily.

As such, breath is suddenly gaining increasing attention in the humanities (Oxley and Russell; Fuller et al.). Much recent scholarship on respiration, like embodied attunement methodologies, focuses on the everyday immediacy of breath as a process through which binaries such as inside/outside, human/nature, and self/world dissolve (Engelmann; Elvey; Gaard; Garnett; Ingold, "On Breath"; Oxley and Russell). Through the rhythms of inhalations and exhalations, breathing organisms make and remake themselves and the air, through the interchange of gaseous matter (Górska; Allen). Humanities scholars argue for the need to attune to the lived experience and the phenomenology of breathing (Oxley and Russell), including its physiological, emotional, cognitive, affective (Tremblay; Gaard; Kenner; Allen; Engelmann), aesthetic, spiritual (Elvey; Oxley and Russell), and epistemic dimensions (Ingold, "On Breath"). This indicates that breath is an apt example through which to consider the witness of climate change as always more-than-human, and the witness and what is witnessed as co-constituting one another.

Yet crucial to a critical analysis of breath is attention to its social and political dimensions: air, breath, and breathlessness are not universal, but always historically, geographically, economically, and intersectionally differentiated (Tremblay; Kenner; Allen; Górska; Apata; Elvey; Gaard). While breathing connects every body to the global atmosphere, local airs are part of a subject's "social location"

(Górska; Allen), and heterogeneous unjust socio-economic structures such as racism, settler colonialism, ableism, and industrialization ensure that not all (multi-species) bodies breathe the same (Kenner; Gaard; Choy, “Distribution”). While police chokeholds are spectacular examples of such “settler atmospherics” (Simmons; Hardeman et al.), many authors clarify that such seemingly acute suffocations in fact arise thanks to multiple forms of invisibilized attritional slow violence (Kenner; Apata).

Breath thus becomes a process that not only enrolls us in specific relations with the more-than-human environment, but also with other humans: those we share breath with, or isolate from, during the pandemic; or those we identify with or against as social movements emerge to contest and dismantle racist police violence (Fergie et al.; Apata; Habtom and Scribe; Tremblay). Here breath becomes not only a necessary condition for life that can be restricted through oppression, but a generative practice that can function as the means for and objective of empowerment, freedom, and better futures (Tremblay; Apata; Elvey; Reading; Ahmann and Kenner; Jokela-Pansini and Militz; Singer et al.). Breath is thus a precondition for life but also for (political) knowledge, one that can be leveraged as an intentional methodology for *knowing* and *responding* to the world in non-dualistic, environmental justice-oriented ways. In a word, breathing can be *witnessing* (Oxley and Russell; Allen; Elvey; Apata; Gaard; Chen).

In addition to this work in the humanities, environmental research has its own history of engagement with breath. Environmental justice activist-scholarship has a long-running focus on the air pollution resulting from the extraction and combustion of fossil fuels (Wright; Kopas et al.; Scott). In a distinct line of inquiry, “aerographers” (Jackson and Fannin) have been researching atmospheres, ambiances, and the cultural and affective life of airs (Adams-Hutcheson; Adey). Exploring the interconnections between these two approaches, research also considers the psychological (both emotional and cognitive) impacts of air pollution (Gaard). Building on these multiple legacies of respiratory-atmospheric scholarship, here we outline climate change as a comprehensive and unequal planetary crisis of breath, one that can be witnessed in part through our personal imbrication in it, but which demands more than just bodily attunement to fully comprehend.

Breath, or more specifically, respiration, is one of the most fundamental processes through which bodies and the planet co-create each other’s climates (Verlie, “Climate Justice”). It is through breath and respiration that vertebrate bodies inhale oxygen, transport that through our lungs and blood to our cells, and produce the energy needed for core functions of living such as eating, removing toxins from our bodies, creating and renewing cells, and so on. Not all species “breathe” as such, but all have their own processes of getting oxygen into their

cells, using it to make energy, and returning carbon dioxide to the atmosphere. While climate change discussions frequently center on energy, these conversations normally focus on fossil fuels, electricity, and atmospheric radiation. Rarely is contemporary corporeal energy – intricately linked to respiration processes – considered, yet as fossil fuels themselves show, organic life is a crucial sector of the planet's energy cycles.

Respiration not only connects each body to the atmosphere, but is a symbiotic multispecies relation through which we make and remake ourselves and others. Firstly, multicellular respiration is the result of the early evolutionary process of symbiogenesis. In multicellular life today, oxygen is directed into the mitochondria, which are the cells' powerhouses. Mitochondria are organelles within our cells, which are the result of endosymbiosis – an evolutionary process where one cell ingested (but did not digest) another, and the ingested cell then became part of the bigger, and new, organism. Respiration is therefore an inherently multispecies affair. Further, the air that we multicellular humans breathe into our lungs is replete with thousands of kinds of microorganisms; the oxygen we need is a result of other multispecies relations, namely, plants' photosynthesis; and our internal microbiomes can also affect our ability to breathe well. In sum, breath is a multispecies and multi-elemental process through which atmospheres and organic life continually co-compose each other in cycles of energetic exchange, and one which operates across minute and grand temporal and spatial scales.

However, the patterns of these fundamental life processes are changing, as the energy that was accumulated through ancestral bodies' respiration and formed into oil, gas, and coal is burned for industrial purposes. This combustion – chemically a similar process to respiration, but one that happens outside of organic cells – which fuels climate change is creating “a world that more and more [human and non-human] people are finding increasingly unbreathable” (Kenner 4). Firstly, of course, fossil fuels pollute the air in the local places that they are mined and burned. Subsequently, in their resultant gaseous forms, they change the composition and qualities of the global atmosphere, retaining heat energy, creating planetary climate change. Many of the localized manifestations of this have respiratory impacts. Increasing thunderstorm asthma events swirl allergenic pollen into lungs. Extreme heat stresses and overcomes respiratory systems. Chronic drought creates toxic dust storms. Bushfires burn forests, suffocate multispecies beings in their vicinity, and then burn their bodies, disperse some of their remains in the form of smoke and ash throughout a much larger airshed, and, in the process, inhibit the respiration of beings further away, while also further warming the planet. Climate change is also decreasing the oxygenation of the ocean, leaving the majority of the world's organisms in increasingly unbreathable conditions (Neimanis, “Weather Underwater”). And as the oceans rise and waters

accumulate more rapidly, terrestrial creatures (such as, but not limited to, humans) drown in basement apartments (New York, USA), subways (Zhengzhou, China), and recently in second stories of houses inundated by fourteen meters of flood water (Lismore, Australia). The resulting mold provides a secondary respiratory impact, in addition to the panicked breathing of those terrorized by the climate catastrophes they find themselves in or those worrying about future impacts.

The impacts of climate change on respiration are multidimensional, transcorporeal, cascading, compounding, and self-reinforcing. The respiratory impacts of climate change emerge from the atmospheric (such as heat stress), hydrological (e.g. floods), geological (e.g. dust storms), and biological (e.g. mold) dimensions of the climate system, but also from the human systems of power that have allowed and even encouraged such rapid change to these dimensions. These impacts also span the stages of climate change, cascading from cause (extractive economic, social, and political systems and values) to source (fossil fuel combustion) to primary impacts (e.g. bushfires) to flow-on impacts (e.g. panic attacks about bushfires). They also include respiratory repression of climate activists who seek to prevent further climate catastrophe, such as through police tactics like pepper spray, imprisonment where weather is often weaponized against respiration (Pellow; Maynard), or worse (Zeng et al.). Some people are subject to many of these impacts, which can function together as a compounding, attritional respiratory violence. When asphyxiation prevents humans and non-humans from enacting climate regeneration, these impacts become self-reinforcing. Considering these characteristics of climate change's respiratory impacts, we assert that climate change is a systemic crisis of multispecies suffocation.

But breath is not only at threat from climate change; it can be a source of agency for preventing climate injustice. Breath is a bodily process that is involuntary, yet which can be voluntarily controlled, and one that is "deeply implicated in the generation and experience of emotion and vice versa through physiological as well as psychological and phenomenological processes" (Allen 96). It can therefore also be a mode for resisting and surviving the suffocating stress of climate catastrophe. The ability to manipulate breath is being used as a tool to help manage emotional climate stress, with meditative and somatic breath practices encouraged as mechanisms for helping breathe through the most acute experiences of climate anxiety towards a more manageable emotional-energetic state, or through community projects that organize breathing choirs (Gumbs et al.) or distribute masks to the vulnerable as the skies fill with bushfire smoke (Chen). This highlights that breath is also fundamental to all efforts for climate action. We chant at protests, we whisper at work meetings, we sigh in resignation at the

news. We breathe through the frustration, the rage, the grief, and abandonment. Collectively, we organize, mobilize, and strategize, breathing to enable it all.

Breath therefore holds open the possibility for a radical methodology of resistance to the suffocating conditions of the “total climate” of racial capitalism and related crises (Sharpe; Ahmann and Kenner). With this aspiration, in the following section we articulate a “conspiratorial” witnessing: a feminist practice of carefully knowing and responding to climate catastrophe’s more-than-human injustices through breathing together. Drawing on environmental humanities’ methods of attunement to our “own” bodies’ breath/lessness during the Black Summer bushfires in Australia (2019–20), we demonstrate that to witness the full complexities of climate catastrophe, witnessing must be prosthetically extended to include multiple and multivalent ways of knowing.

Witnessing Climate Catastrophe as Feminist Conspiratorial Practice

In 2019 and 2020, we – Blanche and Astrida – both spent over eighty days living in “poor” or “hazardous” air, due to the millions of hectares of land that were burning around us during Australia’s “Black Summer” of catastrophic bushfires. Our lived experiences of those fires and that smoke, including our ongoing experience of the afterlives of those events, afford an example of the possibilities, limitations, and considerations for witnessing climate catastrophe through breath.

Although seemingly distant from our bodies’ current immediate affective experience, we can conjure that experience through referring to various notes and data: journal notes that describe our coughing, wheezing, and rasping in the ashen air; Instagram archives of yellow skies and an eerie red sun; or memories of dozens of dead fish appearing suddenly along the riverbank. Blanche recalls waking up and looking out the window, across to the city skyscrapers, using how far she could see as a measure of how bad the smoke was. She remembers ash and even whole leaves raining in the park, falling into her drink at the pub, or sticking to her skin after an ashen ocean swim. At the time, she wrote: “we can and do feel violences inflicted on the atmosphere and broader planetary relations in our own bodies, as these violences are also inflicted, in some ways, on ourselves” (Verlie, *Learning to Live* 7). Meanwhile, Astrida, writing from her new home in Western Canada, experienced the 2021 summer of British Columbia wildfires with an intense and painful embodied recognition: that sky, that sun, the mountains in the near distance veiled by the vaporized bodies of once-alive other

beings. Conjuring her experience of the Sydney Black Summer, she finds an essay she published from that time:

In January I walk along the river under the piss-yellow sky and think about everything those waters are washing out to sea, carried from somewhere just beyond my field of vision. The mullets, like other fish that feed along the bottom of eutrophic waterways, have learned to utilize atmospheric oxygen. They leap, sometimes two feet out of the water, trying to catch a breath. As ash from the fires settled into the waterways, bacteria started to eat the ash-borne carbon. This means eating up the oxygen, too. (Neimanis, "Body" 181)

Through these experiences of living the daily minutiae of respiratory climate violence, we note how we both developed a much more heightened awareness of our inability to escape from the air, and of the leakiness of borders between lungs, atmosphere and all of the other bodies no longer separate from us, neither affectively nor materially. This porosity implicated not only our noses and mouths, but the inadequacy of face masks, the poor construction of our rented homes, the dispersals of the smoke throughout huge swathes of this country and around the globe to others, and the plants, animals, and other organisms that became the air we breathed. The black soot accumulating in our nostrils, inhibiting our own breath, evidenced the suffocation and combustion of other bodies.

As we have so far argued, breathing climate catastrophe can thus function as an "art of attunement" or posthuman witnessing whereby we can, as individuated bodies, pay attention to our porous relationality and co-composition with and through the atmosphere. Focusing on its momentary and hyper-local instantiations, we can also situate this in awareness of longer-term patterns archived in our embodied knowledges: even as crises become distant (or replaced with different ones), bodily memories are triggered in a scent or the color of a sky. Even though the fires do not *feel* present right now, and trying to summon that experience feels a bit tired and misleading, our reflections enable us to revisit (albeit at a remove) our witnessing of and *as* that now-past phenomenon. Breath is one particular mode of connecting the witness of that time to this one. The smoke particles we inhaled during that time are no doubt still present in our bodies in some way (a speck of *Grevillea* incorporated into lung tissue, or a trace of koala lodged in a femur). While the fires are not our current context, the climate change that we ostensibly witnessed "outside" ourselves is now the witness: it is now our inhibited, climate-changed lungs that breathe in/witness these changed circumstances. This is more-than-human witnessing and underlines the significance of an embodied practice of attunement as blurring the ontological distinction between witness and witnessed.

At the same time, we might now wonder: how did we know of those koalas whose bodies were carried in the ash? What makes us aware that a slight cough

may be a connection to that summer two years ago? And how do we connect these things that we attune to with those “broader planetary relations” in Iraq or Delhi? As bodies whose social locations offer privilege, although we struggled to breathe during that time, our experience was not the same as that of asthmatics, newborns, the elderly, those working or living outside, and species with more exposure to the smoke or more vulnerable respiratory systems, who suffered worse. But again: how do we know this? Embodied sensation via attunement opens up important transcorporeal somatic understandings of witness, but bodily attunement alone cannot verify things that are not present to our own bodies. While important, these methods of *witness* cannot get us to the knowledge of climate change as multivariate, unequal, and complex.

Returning now to our reflections in section 2, we recall that Haraway insists on situated knowledge as a way of grounding our own accountability for what we know. As we gather our reflections on climate change as more-than-human witnessing via breath attunement, we note, two points about Haraway’s modest witness that are crucial here. First, we recall that Haraway does not posit situated knowledge as hermetically sealed into solipsistic inaccessibility to anyone’s experience but our own. Extending Haraway’s arguments, we come to appreciate that knowledge from others’ perspectives cannot be automatically accessed but it is at least partially available, if we are willing to put in the work to come to know it. Our own “witness” is therefore one view within broader patternings. Haraway also reminds us that all perspectives are neither interchangeable nor equally valid, and none are “innocent,” that is, without accountability (“Situated Knowledges”). This means we need to account for the gaps in our own knowledge. So again: how?

While attunement methods provide valuable tools for understanding how our sensory bodies understand the ecologies around us, to get at what we cannot immediately see or sense, we need to amplify and extend our bodily sensation. Here, we refer to the second relevant aspect of Haraway’s witness, namely her claim that all vision (as a metonym for knowledge in her work) is prosthetic; all knowledge is mediated: “there are only highly specific visual possibilities, each with a wonderfully detailed, active, partial way of organizing worlds” (583). In this sense, no less than the specific powers of our own primate retinas and optic nerves mediate what we can perceive, so too do microscopes, or qualitative interviews, or poems we might read, or data we might hear about on the news. All of these serve as mediating prostheses that open certain experiences for us (while restraining others). These apparatuses can create an interface of experience and extend how and what our own climate change bodies can sense. Together, they form an assemblage of more-than-human witness. Haraway’s feminist objectivity invites a kind of feminist *conspiratorial* witnessing.

In articulating a conspiratorial witnessing, we build on Choy (“Distribution”), Sharpe, and Habtom and Scribe in recognition that conspiracy means to *breathe together*. As climate is itself composed in part through the ongoing amalgamation and reconfiguration of the respiration of all species on this planet, alive now and long dead, to be-with and witness climate change is to be unavoidably entangled in processes of breathing together. Yet, as Choy articulates, “breathing together rarely means breathing the same” (“Distribution,” para 7). While the atmosphere connects us all in multispecies breathscapes, “we” have widely diverse respiratory capacities and experiences. Conspiratorial witnessing cannot involve appropriation or erasure of difference, or false equations of differential suffering. Breathing together means breathing differently, with an aim of sustaining breath (*re-spiration*) for the many, as best as possible, despite the unreconcilable conflicts of multispecies justice (Verlie, “Climate Justice”). Conspiratorial witnessing involves embodied attunement that situates the “self” as witness-and-witnessed, “one” that knows the world through its manifold dispersed entanglements in the world; but it also requires modes for knowing, at least partially, many others and othered experiences.

These other modes of knowing might include “proxy stories” (Neimanis, *Bodies of Water*; Neimanis and Phillips). Proxy stories involve bringing other specialized knowledges and other bodies’ experiences of witness into the conversation, serving as *amplifiers* and *sensitizers* of our own attunements. Scientific data, such as air quality measurements indexed relative to likely harm on an imagined average (human) body, offer one such story. As Ulrich Beck notes, many of our contemporary embodied experiences require “the ‘sensory organs’ of science – theories, experiments, measuring instruments – in order to become visible or interpretable” (qtd. in Alaimo 19). Drawing on these observations, Alaimo suggests that science can help create “syncretic assemblages” of knowledge (19). Scientific explanation does not *invent* this knowledge; it just uses different tools to extend sensory experiences of the world in certain ways (Verlie, “Rethinking Climate Education”). Scientific understanding can access worldly phenomena, condense that part which may seem inaccessible, and offer it back up to our bodies to experience anew. In this way it is also a prosthetic instrument of more-than-human witness, similar to a pair of glasses or a hydrophone (Neimanis and Phillips).

Also recalling the ethical import of feminist more-than-human witnessing, to understand the social, cultural, and historical dimensions of climate change, as also colonialism, heteropatriarchy, capitalism, and other systems of power, our proxy stories must also account for the different affective experiences of breathing climate crises and resistance, which scientific proxy stories may not be able to measure. What would it mean, for example, to find conspiratorial breathing

with Wakka Wakka and Yaegl artist Hannah Brontë, and her photography and video work *tellus terra*? This work depicts five women – “some traditional owners, others visiting from lands connected and affected by rising seas, droughts and volcanic eruptions” (Brontë qtd. in Neimanis *Body*) – holding children on, beside, and inside their bodies. The women, like the scorched trees in the forest in which they stand, are wrapped in black. “How will I water my children while our country is on fire?” Brontë asks, in the text that accompanies the image. “Indigenous peoples around the world have warned of colonial mismanagement of land, water, skies, and people,” she reminds us, as the blackened trees in the images grow new branches, breathing incandescent green. “The capitalist patriarchy that enforces white supremacy is on fire,” Brontë continues. The video soundtrack in *tellus terra* is water, gurgling, dripping, and aerated with planetary breath.

Or we might learn something from Jimmy, breathing for his life during the catastrophic bushfires of New South Wales on New Year’s Eve, 2019. Jimmy miraculously found refuge while everything, including his sister Katy, burned around him. We learn this not from attuning to ourselves, or even to an account given by Jimmy, but from Danielle Celermajer who, in her moving work of creative nonfiction, *Summertime*, writes about these events and how they impacted Jimmy, and her other companion animals – pigs (Jimmy and Katy), horses, donkeys, ducks, dogs, and more. Celermajer witnesses this catastrophe happening alongside and with her beloved animal kin, while still deeply aware of how their embodied situations and intelligences differ from her own. While bushfire theoretically makes us all vulnerable, Celermajer’s close attention to these animals’ lives allows her to rest on the heartbreaking details of what made each animal specifically vulnerable to the fierce breath of the fire, and also how each was changed by it – each becoming climate change, quite literally, in different ways.

We might also turn to scholar Mel Y. Chen’s account of the COVID pandemic in the San Francisco Bay Area, mingling with the California wildfires to create a specific kind of crisis of breath. Chen demonstrates the *material* connection of these “two airy phenomena”: “smoky air intermingles with the exhalations of an infected, unmasked pedestrian, creating a doubly potent inhalant for someone else,” writes Chen, while “in the next beat, wildfire smoke is also inhaled into that infected pedestrian’s body” (para 4). Here, witnessing-breathing climate change is complexified by its entanglement in other crises. But Chen also reminds us that to connect these catastrophes *conceptually*, we need to adopt a feminist, antiracist, and critical disability studies perspective. Otherwise, we will fail to see the ways both COVID-19 and climate change compound the vulnerabilities for disabled, queer, Black, Asian, Indigenous, and poor bodies. We will also fail to acknowledge these same bodies as leading the way in insisting on creative forms of care. Chen provides the example of the queer-/trans-led Mask Oakland who are prioritizing

delivery of N95 masks to Oakland's most vulnerable residents and thus concomitantly engaging in practical theorizing of what "the necessary mess" of "airborne justice" might look like.

Creative and personal engagements such as Brontë's and Celermajer's, and sophisticated intersectional analyses such as Chen's that incite deep feeling and join the dots between issues we are encouraged to keep separate, might be ignited by attunement to our own embodied situation. Breathing as an art of attuned witnessing may open to an empathetic capacity that invites radical forms of solidarity – or it may not. The considerable differences in different bodies' respiratory systems, both within humans and between us and other species, and the stark spatial unevenness in which atmospheric crises materialize, attest to climate change as a social and political phenomenon whose roots may not be easily accessed by our own bodily sensory capacities. Anyone's ability to fully understand another's respiratory experience of climate crisis is always partial. To fully bear witness to climate change, as more-than-human witnesses of a more-than-human phenomenon, we must be a conspiratorial witness, a feminist witness: witnessing from and with many bodies together, with different knowledges, different archives, different experiences. This demands curiosity and care for the situations of others, as we then start to notice patterns, chokepoints, repetitions, absences.

Conclusion

Across recent decades, the general wisdom in climate circles was that many people struggled to understand and relate to climate change because it was deemed an abstract issue. Climate communicators (including ourselves) criticized the reliance on science-based representations, whose distanced and supposedly objective efforts at witnessing perversely reinforced notions that climate change was divorced from everyday lived experience. We (collectively) have argued for more personal, place-based, affective modes for engaging with climate change. Yet as the climate crisis worsens, more and more multispecies communities now have first-hand experience of the impacts of climate change. For many, this includes the very visceral experiences of inhibited breath and suffocation. As we have argued, global climate change is creating a systemic planetary crisis of respiration.

As a universal (though differentiated) requirement which is unavoidably experienced at the level of the individual body, breath potentially offers a mode of witness that can afford what science alone has not managed to achieve: recognition that the climate crisis is deeply personal (for everyone) and is here and now. Embodied attunement to our breath, as a process which entangles us affectively,

ecologically and physiologically with the atmosphere, can be an important tool for witnessing climate catastrophe. Nevertheless, despite underlining our transcorporeal and more-than-human entanglement in one another – whereby we are what we witness – breathing also demonstrates that no one body can know the entirety of climate collapse through their own breath; as with other climate injustices, climate-induced breathlessness is starkly differentiated. We argue that ethical witnessing for climate justice demands such methods of embodied attunement be enacted alongside diverse, sometimes epistemologically and ethically contradictory, modes of knowing climate change, especially those that can reveal systemic and multi-scalar causes and effects. We call this feminist conspiratorial witnessing. Conspiratorial breath as a mode of witnessing climate catastrophe forces recognition that “we” are part of (but not the entirety of) the catastrophe we are witnessing unfolding in multi-scaled variability all around the world. We are the witness, we are the witnessed, yet we are never fully any of this.

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Cara Daggett

9 Petro-masculinity: Fossil Fuels and Authoritarian Desire

Introduction

Global warming poses a problem for fossil fuel systems and those who profit from them; leaving fossil fuels in the ground likely means leaving trillions of dollars of profit in the ground (McKibben). Vast networks of privilege that are sustained by fossil economies are likewise threatened. As Jairus Grove reflects, “environmental justice will require *unequal* roles: significantly constraining, even repressing, the powers of the Eurocene” (“New Nature”). Similarly, the “Planet Politics Manifesto” reminds us that “the planet is telling us that there are limits to human freedom; there are freedoms and political choices we can no longer have” (Burke 507).

Perhaps not surprisingly, given the amount of money and privilege at stake, the tragic *ethos* demanded by global environmental justice is being resisted. Those regions that have emitted the most carbon dioxide are positioning themselves to profit from a warming earth by advancing a militarized and corporatized version of climate security. The result, as Christian Parenti foresees it, is the likelihood of a “politics of the armed lifeboat,” given that, already,

the North is responding with a new authoritarianism. The Pentagon and its European allies are actively planning a militarized adaptation, which emphasizes the long-term, open-ended containment of failed or failing states – counter-insurgency forever. This sort of “climate fascism” – a politics based on exclusion, segregation and repression – is horrific and bound to fail. (“Catastrophic Convergence” 35)

“Climate fascism”, with its camps, barbed wire and police omnipresence, is a likely out-come of climate (in)security (Parenti, *Tropic of Chaos*).

A nascent fossil fascism is already evident in the wake of the 2016 election of Donald Trump as President of the United States and the conservative capture of the US Congress. In a short time, the Trump Administration and the Republican Party have shored up fossil fuel systems by denying climate change and dismantling a host of environmental policies including: withdrawing from the Paris Climate Agreement, installing a climate denier (Scott Pruitt) to lead the Environmental Protection Agency, taking steps to kill the Clean Power Plan, weakening the Clean Air Act and the Clean Water Act, lifting a moratorium on new coal leases on federal land, ending a study on the health effects of mountaintop coal removal, and moving to open nearly all US coastal waters to offshore drilling for oil.

Climate denial obviously serves fossil-fueled capitalist interests. However, coal and oil do more than ensure profit and fuel consumption-heavy lifestyles. If people cling so tenaciously to fossil fuels, even to the point of embarking upon authoritarianism, it is because fossil fuels also secure cultural meaning and political subjectivities. Since the new imperialism of the nineteenth century, fossil fuels have become the metaphorical, material, and sociotechnical basis of Western petrocultures that extend across the planet.¹ In other words, fossil fuels matter to new authoritarian movements in the West because of profits and consumer lifestyles, but also because privileged subjectivities are oil-soaked and coal-dusted. It is no coincidence that white, conservative American men – regardless of class – appear to be among the most vociferous climate deniers, as well as leading fossil fuel proponents in the West (McCright and Dunlap).

This article undertakes a feminist reading of climate denial and fossil fuel boosterism in new authoritarian movements in the West in order to interrogate the entanglement of masculinity and fossil fuels. Through the concept of petro-masculinity, I emphasize the relationship – both technically and affectively, ideationally and materially – between fossil fuels and white patriarchal orders. While misogyny and climate denial are often treated as separate dimensions of new authoritarian movements, a focus on petro-masculinity shows them to be mutually constituted, with gender anxiety slithering alongside climate anxiety, and misogynist violence sometimes exploding as fossil violence.²

Despite a growing interest in gendered analyses of climate change (Moosa and Tuana; Cuomo; Arora-Jonsson; Nelson; MacGregor, “Gender”), the intersection of gender and energy remains understudied, with most research located in the development field, where the focus is on equal access to fuel (MacGregor, “Gender”). Meanwhile, research into masculinity and energy, as well as environmentalism, is even more limited.³ Nevertheless, masculine identity, and the patriarchal orders that it supports, is important for understanding (the lack of) political responses to climate change, especially in the global North. Sherilyn MacGregor, for example, argues that environmentalism itself has become masculinized as a result of the dominance of science and security frames for understanding climate change. These

1 This is the focus of the emergent field of energy humanities. See, for example, Wilson et al.; LeMenager; Huber; Mitchell.

2 This draws upon feminist research into the gendered dimensions of violence. See, for example, Sjöberg; Kirby and Henry; Kirby; Wibben.

3 Ironically, Hultman notes that R.W. Connell’s early work (“A Whole New World”) to introduce the concept of “hegemonic masculinity” focused on the case of men in environmental movements. Hultman also points to rural studies research on masculinity and the environment as an important exception. For example, see Bell and Braun; Bell and York.

“hardened” framings result in a preference for “the kinds of solutions that are the traditional domain of men and hegemonic masculinity”, which lead to a “downgrading of ethical concerns” like justice, health, or economic equity (MacGregor, “Stranger Silence”).

Appreciating the historic relationship between fossil fuels and white patriarchal rule is helpful in terms of understanding the authoritarian desires and anxieties aroused by the Anthropocene. A feminist reading of fossil fuel systems points to the emergence of another dangerous “catastrophic convergence”, to adopt Parenti’s phrase: in this instance, the convergence is between climate change, a threatened fossil fuel system, and an increasingly fragile Western hypermasculinity. For Parenti, convergence does not “merely mean that several disasters happen simultaneously, one problem atop another”, but “that problems compound and amplify each other, one expressing itself through another” (*Tropic of Chaos* 7). Analyzing petro-masculinity alerts us to those perilous moments when challenges to fossil-fueled systems, and more broadly to fossil-soaked lifestyles, become interpreted as challenges to white patriarchal rule.

Petro-masculinity, like fossil fuel systems, arguably has global dimensions. However, like other masculinities, petro-masculinity should be understood as manifesting in multiple, and locally specific, ways. This article focuses upon its most prominent recent appearance: in new authoritarian movements in the US.⁴ The US case is instructive, as American wealth, high energy consumption, and militarism make its climate politics crucial to planetary security. The article is oriented around the three convergent phenomena of fossil fuel systems, white patriarchal rule, and authoritarianism. The first two sections establish the historical relationship between fossil fuels and authoritarianism, on the one hand, and fossil fuels and white patriarchal rule, on the other. The remainder of the article employs petro-masculinity to understand the combustible convergence of all three in new authoritarian movements in the US. Here I focus on a psycho-political analysis of authoritarianism, positing fossil-fuel use as violent compensation for the anxieties provoked by both gender and climate trouble. The article concludes by considering the willful continuation of fossil-fuel regimes as a misogynist practice, adopting Kate Manne’s understanding of misogyny as the policing activities that punish deviants and reinforce patriarchal rule.

⁴ Even narrowing to the US risks over-simplification, as the gendering of fossil fuels will vary within regions, e.g. as it does between Appalachian coal miners and the Silicon Valley tech culture.

Fossil Fuels and Authoritarian Politics

Fossil fuels built the modern world. There remains an appreciation for fossil fuels – or, at least for the high energy consumption they provided – as a catalyst of mass liberal democracy. This is evident in ecomodernist calls for a good Anthropocene that would decouple the benefits of fossil fuels from the fuels themselves (Asafu-Adjaye et al.). After all, while industrialization wreaks planetary destruction, its spread was coterminous with humanist victories like the abolition of slavery, increased literacy rates, gender equality, and poverty reduction. Dipesh Chakrabarty notes that this cannot be a coincidence, and that “the mansion of modern freedoms stands on an ever-expanding base of fossil-fuel use. Most of our freedoms so far have been energy-intensive” (Chakrabarty 208).

However, in addition to the ecological harms caused by oil and coal, fossil fuels have also done serious political harm. Timothy Mitchell argues that fossil fuels have had contradictory effects in terms of assembling democracy. On the one hand, due to coal’s material traits, its extraction and supply were vulnerable to choke points that could be exploited by a growing labor resistance in the nineteenth century. In contrast, oil systems were less vulnerable to democratic hijacking. The global oil systems of the twentieth century required a host of illiberal and violent measures on the part of Western states and oil companies in order to ensure oil scarcity and, in turn, a profit. In the case of oil, the West touted a democratic creed while simultaneously benefiting from and supporting authoritarian regimes and extremist movements in the Middle East and North Africa. Likewise, fossil fuel and mineral extraction were secured, both within the US and abroad, by racist regimes of differential pay and access to benefits that were aggressively anti-democratic on the part of corporations and the states that supported them (Vitalis).

Carbon democracy thus arose in tandem with, and reliant upon, authoritarianism. Put more strongly, authoritarian politics have historically been part and parcel of the project of securing Western (fossil) rule. By fossil rule, I mean a logic of governing that is dependent upon intensive fossil fuel consumption in both material and, as I will explore below, psycho-political ways. Fossil rule is mobilized through “fossil capital,” Andreas Malm’s term to describe how modern capitalism was erected around a belief in “self-sustaining growth [. . .] welded to the combustion of fossil fuels” (292). Fossil capital requires an unending, cheap flow of fossil fuels for the concentration of wealth at the expense of other people and things, and this necessitates authoritarian tactics in certain sites and moments, a

phenomenon that has been exhaustively catalogued by postcolonial theorists and thinkers in the global South.⁵

As a result, authoritarianism, rather than a perversion of modernity, or a lurking risk of mass industrial society to be avoided, appears instead as the very marrow of a contemporary life predicated upon burning fossil fuels. We cannot take comfort that, over time, creativity will shed its destructive possibilities.⁶ The novelty and freedoms enabled by fossil-fueled civilization are entangled with horrific violence, such that to embark upon fossil-fueled life is to spark off mass species extinction just as much as it is to make possible the internet or global social movements.

Carbon democracy strives to conceal this underbelly of mass destruction from privileged publics, whether in subterranean pipelines, in zoning plans that place heavy industry alongside poor communities and people of color, and in the very notion of throwing things *away*. Similarly, the authoritarian practices required by fossil capital in the global South were often geographically separated from liberal forms of governance in the West. This made it possible for many Westerners to remain ignorant of their complicity in fossil authoritarianism, and to continue to believe that fossil fuels and liberal democracy are natural and inevitable partners. The narrative of righteous fossil democracy is crucial not only to American identity *writ* large, but to its hegemonic white masculinities. However, as Aimé Césaire pointed out more than 60 years ago, the violence that Anglo-Europeans have practiced abroad returns with “a terrific boomerang effect,” and that despite efforts to turn a blind eye or justify the violence, “colonization works to decivilize the colonizer, to brutalize him in the true sense of the word, to degrade him, to awaken him to buried instincts, to covetousness, violence, race hatred, and moral relativism” (35–36).

Fossil Fuels and Masculinity

The American public understands Donald Trump’s “Make America Great Again” mission as an homage to a mid-twentieth-century fantasy of American life, when white men ruled their households uncontested, a formula that relied upon widespread full-time employment for white men with wages that could support house-

⁵ See, for example, Césaire; Mignolo; Wynter; Fanon; DuBois.

⁶ Jairus Grove writes that “history is neither a series of creative destructions nor destructive creativities, as if either creation or destruction could be given primacy as the driving tendency of existence” (“Apocalyptic Tone”).

wives and children. In the words of reporter Zoe Chace, reflecting on the 2016 election, “for a lot of people, ‘Make America Great Again’ was about ‘make men great again.’”

Trump’s motto is a kind of petro-nostalgia,⁷ in that the achievement of the mid-twentieth-century patriarchal ideal in the US was predicated upon an ongoing supply of cheap fossil fuels. Cars, suburbs, and the nuclear family, oriented around white male workers, formed a triumvirate that yoked the desires of Americans not only to wage labor, but to the continued supply of cheap energy that made the dream possible. These privatized consumer perks, along with New Deal infrastructure and the policies that supported them, were intended to inoculate the American public against the twin threats of communism and fascism, both of which lurked in the aftermath of the Great Depression and World War II (Huber 33). On the supply side, especially prior to the 1970s’ oil crisis, the state helped to secure an artificial oil scarcity that ensured profits for oil companies (Boal et al.; Yergin; Mitchell; Huber). On the demand side, the state also helped to cultivate oil desires, such that fossil fuel consumption became necessary to achieving the American dream.

Finally, and most importantly for the purposes of this article, the American way of life was centered around a version of white, patriarchal rule in which the achievement of hegemonic masculinity required intensive fossil fuel consumption and, for the working- or middle-class, jobs within or reliant upon fossil fuel systems (jobs and wages that, like state welfare benefits, were unequally distributed by race, often with the conscious corporate intention of dividing laborers in order to prevent unrest).⁸ For many, extracting and burning fuel became a performance of white masculinity and of American sovereignty, such that the explosive power of combustion could be crudely equated with virility.

No wonder that access to cheap and plentiful gas and energy became the *sine qua non* for American well-being, and a right demanded both of the state and for the state. Even as Americans in the twenty-first century disagree about whether health care or food should be considered a right, there is a widespread, bipartisan assumption that Americans deserve cheap energy, and that the state has a duty to ensure it.⁹ In turn, any threat to energy supply appears simultaneously as a threat to the American dream and, in turn, the dominant position of the US in the world.

⁷ I borrowed the term “petro-nostalgia” from a conversation between Dominic Boyer, Cymene Howe, and Timothy Mitchell on the podcast *Cultures of Energy*, episode 57.

⁸ Robert Vitalis shows how these policies were instituted by American oil companies in Saudi Arabia.

⁹ For example, rises in fuel prices at petrol stations often incite ample media coverage in the US, and have been shown to affect presidential approval ratings. In a 2005 Gallup poll, taken as fuel

“Make America Great Again” thus insists upon a “Leave It to Beaver” innocence about fossil fuel burning – that there are no downsides to burning more oil and coal, or at least none for white Americans. Exit polls show that it was a campaign message that resonated not only with white men, but also with just over one-half of white women voters,¹⁰ some of whom may also find security in the *status quo*, and therefore resent threats to fossil-fuel systems and/or hegemonic white masculinities. Through the rosy nostalgia afforded by petro-masculine identity, the affront of global warming or environmental regulations appears as insurgents on par with the dangers posed by feminists and queer movements seeking to leach energy and power from the state or traditional family.

Petro-masculinity approaches masculinity as a socially constructed identity that emerges “within a gender order that defines masculinity in opposition to femininity, and in so doing, sustains a power relation between men and women as groups” (Connell 454). Masculinities are always multiple, and involve ongoing struggles over which version of masculine identity will become socially dominant, or hegemonic, to adopt R.W. Connell’s influential concept. Petro-masculinity draws upon aspects of traditionally hegemonic masculinity, but at the same time, its appearance in the American far-right today is better understood as a kind of *hypermasculinity*, which is a more “reactionary stance. It arises when agents of hegemonic masculinity feel threatened or undermined, thereby needing to inflate, exaggerate, or otherwise distort their traditional masculinity” (Agathangelou and Ling 519).

Petro-masculinity is reactionary in part because it is not the only hegemonic masculine identity available in the late industrial US; it is perhaps not even the most dominant one in terms of the gendered experiences of energy or electricity systems.¹¹ Ecomodernism, for example, has become a prominent environmental disposition with arguably masculinized dimensions and is especially popular among elite men (think of Elon Musk) (Anshelm and Hultman; Hultman). Instead of the “limits to growth” mood of the 1970s, which proposed decreasing energy consumption, ecomodernists claimed that “there was no conflict between eco-

prices were rising, eight out of ten Americans agreed that high gas prices were “unfair”, and a majority thought that President George W. Bush could take steps to lower them. See Harbridge, et al.; Carroll and Jones.

10 More white women voters have backed Republican presidential candidates than Democrats in recent US history. Race, conservative ideology and abortion are likely key dimensions explaining this trend. It is an important reminder that women are not an essentialized category (CNN).

11 Here I am examining dominant modes of masculinity. This unfortunately overlooks early efforts to reimagine more ecologically generous masculinities fit for a changing planet. For example, see Allister.

nomie growth and environmental problems,” and that technological solutions, often private and market-based, would solve any difficulties (Hultman 90–91), a belief that continues to reign in much of Western corporate culture. Not only was growth not a problem – it was the solution, the very foundation of the innovation and entrepreneurship required to fix things (95).

According to Martin Hultman, ecomodernism arose alongside a shift in hegemonic masculinity in the West, which Hultman traces through the changing roles played by Arnold Schwarzenegger, who became a globally influential ecomodernist figure. Older, industrially-aligned masculinities, embodied by Arnold Schwarzenegger in his youthful days of machismo and pumping iron, were discarded for the hybrid masculinity of Governor Schwarzenegger of California, an ecomodernist champion of fuel cells and greenwashed Hummers. Ecomodernism contributed to a new style of masculinity “in which toughness, determination and hardness was mixed with appropriate moments of compassion and care” (Anshelm and Hultman 92). However, like Sherilyn MacGregor, who critiques the masculinization of climate security, Hultman insists that ecomodernism, and the Silicon Valley masculinities often aligned with it, are “asymmetric” in their value structures. Care and compassion remain subordinated to techno-rationality, toughness, and growth (Hultman 97–98; Nelson).

In contrast to ecomodernist masculinities, petro-masculinity disdains any veneer of hybridity or care, and it also has no truck with sunny, California technoscience.¹² Ecomodernist masculinity may seek to adapt itself to new energy technologies and cultures, but petro-masculinity, as a reactionary stance, aims to defend the endangered *status quo*, entrenching the petrocultures that have historically propped up Anglo-European fossil-burning men. And while petro-masculinity is built upon mid-twentieth-century fantasies, there is nothing nostalgic about its orientation to fossil fuels. After all, the fabled past of innocent fossil fuel consumption is irretrievable. In the US post-war economy, fossil fuel systems functioned as the means to becoming a real man – if burning them entailed violence, this was constructed as an unfortunate side effect to be made invisible to privileged consumers. But fossil fuels have become a dead end, both for the planet and for the goal of middle-class jobs. In this context, burning fossil fuels can come to function as a knowingly violent experience, a reassertion of white masculine power on an unruly planet that is perceived to be increasingly in need of violent, authoritarian order.

¹² This is an intentional riff on the title of William Connolly’s examination of the Christian right, *Capitalism and Christianity, American Style*. Fossil authoritarianism is the latest instantiation of the political formation that Connolly traces and, not coincidentally, Connolly was one of the few to foresee the threat of fascism long before Trump’s rise to power.

A Disastrous Convergence: Masculinity, Fossil Fuels and Authoritarianism

A political-economic reading of fossil fuel systems, such as that undertaken by Mitchell or Huber, is indispensable to understanding the formation of fossil authoritarianism. The threat to fossil-fueled privilege can motivate authoritarian practices to secure ongoing profits and privileged ways of life. However, as many have pointed out, fossil fuels may no longer make economic sense for many American voters, much less for the planet. Coal companies do not provide the secure, high-paying jobs that they once did in the US, a trend that will continue no matter how committed Trump is to bringing back coal (Bell and York). Even Texas, which continues to revel in its identity as an oil and gas titan, has been vigorously developing wind power, which supplies up to half of the state's electricity needs (Wright). In many formerly fossil-bound regions of the US, like Appalachia or Texas, fossil fuels have become potent conservative symbols that represent autonomy and self-sufficiency, rather than real economic interests for most of the public.¹³

In addition to considering the political economy of fossil fuels, then, it is also important to understand their psycho-affective dimensions, paying attention to the collective desires of those whose identities are most tied to petrocultures. In order to do so, this section puts the concept of petro-masculinity into conversation with psycho-political studies of authoritarianism. The Frankfurt School was involved in the most influential early research, which drew heavily upon Freudian analysis, including *The Authoritarian Personality* (to which Theodor Adorno contributed), a study of fascist-prone Americans, and Erich Fromm's *Escape from Freedom*. These texts sought to trace the contours of the authoritarian personality – an ideal figuration, rather than descriptions of actual people. Many authoritarian traits were, to some degree, common in public life, but when amplified and in combination, they described a character “whose structure is such as to render him particularly susceptible to antidemocratic propaganda” (Adorno et al. 1). And because authoritarian desires circulate everywhere, albeit with local intensities, authoritarianism persists as an ongoing temptation amid democratic collectives. In this vein, Foucault, in his preface to Deleuze and Guattari's *Anti-Oedipus*, famously encouraged a conceptual distinction between “historical fascism” and “the fascism in us all, in our heads and in our everyday behavior, the

¹³ An important exception is natural gas, which has become a profitable and growing industry. However, despite the real risks of fracking, natural gas is often touted as an environmentally friendly fuel, and so it does not carry the same violent effect as oil and gas.

fascism that causes us to love power, to desire the very thing that dominates and exploits us” (Foucault xv).

Psychological studies of authoritarianism in the twentieth century are best taken as narratives of specific historical movements, rather than as universal scientific truths. Nevertheless, it is possible to identify patterns. One of the most consistent themes that runs across Western authoritarian movements is a widespread sense of gender anxiety – especially having to do with masculinity.¹⁴ Patriarchal ideals are manically proclaimed (by adherents who identify as women, too), but beneath the obsession with hypermasculinity lies an underlying fear of the social fragility of masculinity, as well as a shared sense of having personally fallen short of that ideal. Capitalist crises, such as the worldwide depression of the 1930s or the 2008 financial crisis, do not help; they only make it more difficult for many to achieve that essential emblem of modern masculinity: a breadwinner job. *The Authoritarian Personality* notes that “high-scoring” men (those with more authoritarian traits) “show deep-seated fears of weakness” in themselves. The meaning of weakness to these men seems to be tied up with intense fears of nonmasculinity. To escape these fears they try to bolster themselves by various antiweakness or pseudomascularity defenses, where pseudomascularity means “boastfulness about such traits as determination, energy, industry, independence, decisiveness, and will power” (Adorno et al. 856, 428).

Gender anxiety – or a sense of masculine weakness – is intertwined with another common trait of the authoritarian character: sadomasochism. After all, masculine displays of strength and independence would seem to be at odds with unquestioning submission to an authoritarian leader. But as Fromm argues, “*the lust for power is not rooted in strength but in weakness* [. . .] It is the desperate attempt to gain secondary strength where genuine strength is lacking” (160). In other words, sadomasochism reflects a desire to overpower others that is aroused by, and at the same time stymied by, one’s own sense of impotence. The failures of fossil capitalism to sustain its white masculine order, which it helped to erect, with wages and commodities, only exacerbates the sense of collective impotence. In order to manifest power, the impotent, authoritarian personality is forced to subsume its urge to dominate within submission to a stronger external force, be it God, the laws of the market, the military leader, or a tyrant. Or fossil-fuel burning.

Petro-masculinity points to such moments, suggesting that masculinity can be reaffirmed through an obeisance to oil. Oil itself reflects the contradictory im-

14 For more on the association of masculinity and authoritarianism, see Mangan; Spackman; Bellassai; Peterson and Zurbriggen.

pulses of sadism and masochism at work in the fossil-inflected authoritarian personality. *Petro* connotes both hardness and flow: it is from the Greek for rock or stone, but as petroleum, it is the liquid produced by pressurized decomposition of plant and animal matter over millions of years. It is both death (fossils), and life (energy, wrought from death), both compression and escape.

As hardness, petro- captures the desire to congeal masculinity, and to protect it from dissipation. Alongside gender anxiety and sadomasochism, rigidity is yet another omnipresent trait of the authoritarian personality. In *Male Fantasies*, Klaus Theweleit's study of the proto-Nazi *Freikorps*, rigidity is an enduring theme for the "soldier-male dam," who seeks to guard his dam against all that flows:

none of the streams we've mentioned can be allowed to flow. He is out to prevent all of them from flowing: "imaginary" and real streams, streams of sperm and desire. [. . .] All of these flows are shut off; more important, not a single drop can be allowed to seep through the shell of the body. One little drop of pleasure [. . .] threatens to undermine the whole system (the system of dams). (Theweleit 266)

Theweleit is important for understanding petro-masculinity because he opens up a link between feminist theory and political economy, between the fear of women and the fear of communists, both of which animated early Nazis. Drawing on Deleuze and Guattari, Theweleit connects the *Freikorps*' fear of flow to the forces of industrialization.

Here we can begin to intuit how fossil fuels might feature in authoritarian desires. Theweleit describes how industrialization "opens up the borders of a hitherto unknown human productive potential, setting in motion streams of money, commodities, and workers." In parallel, though, runs "a process of limitation" that the capitalist elite erects against pleasure, an effort to capture more and more surplus, and "to prevent the new productive possibilities from becoming new human freedoms" (264). Transgressive desires that are not coded by money cannot be allowed to flow – especially not queer desires, nor unregulated desires for women. Theweleit argues that it is the Western image of Woman, an image that "lives in water" (273), that comes to stand for flow *qua* flow, for all that threatens to escape and dissolve the male ego. In Barbara Ehrenreich's foreword to *Male Fantasies*, she observes that "women's bodies are the holes, swamps, pits of muck that can engulf" (xiii), and so they, perhaps more than anyone or anything, inspire revulsion and fear.

The damming up of the authoritarian body, and state, against desire is justified as necessary to guard its strength, and to properly direct its energy into productive pathways. Too much flow, too much desire, saps its "energy," letting it seep out into wasteful, swampy tributaries, threatening to make it soft and effeminate. Therefore, rigidity is especially necessary when energy itself is threatened.

Such rigidity – often practiced as damming up the masculine body – reappears everywhere authoritarianism creeps in. In *The Reactionary Mind*, for example, Corey Robin observes that American conservatives share the belief that the US has gone soft since the New Deal, as the welfare state

sapped the nation's energy and patriarchal vigor. Instead of sturdy husbands and firm fathers controlling their wives and children, lisping bureaucrats and female social workers were now running the show. World War II exacerbated the problem: with so many men away at the front, and women working in the factories, male authority was further eroded. (206)

The answer to the queerness and softening of the US was to make her hard again, to narrowly channel desire into the streams of heterosexuality and money, and to redirect all excessive desires into violence (208, 241; Theweleit 271).

Proto-fascist movements in the US who celebrate Trump's victory likewise pair masculine rigidity to violence. As a proto-authoritarian leader, Trump alone is permitted laxity in his habits; his "pseudomascuine" boasts of sexual exploits and aggressive deal-making serve as conduits that channel his followers' pent-up desires.¹⁵ Meanwhile, his deputy, Mike Pence, is excessively, even comically, rigid and anti-sexual, celebrated among evangelicals for avoiding spending any time alone with women who are not his wife. What about Trump's followers? While further empirical study is required, a hate group called The Proud Boys offers an illustrative example. The Proud Boys are a white male organization that became associated with the 2017 fascist riots in Charlottesville, Virginia, and whose members believe in reinstating traditional gender roles by "venerating the housewife".¹⁶ Their platform reverses the shame of white consumption and imperialism: in order to achieve the first of three "degrees" required to join the group, a member declares, "I am a Western chauvinist, and I refuse to apologize for creating the modern world." The second degree involves enduring a beating while naming breakfast cereals, and also "no wanks," or limiting masturbation to no more than once a month, a practice that one Proud Boy describes as "more of a religion." Group member Dante explains that "[masturbation] mutes me. It mutes my masculinity" (National Public Radio). The final, third degree is getting a Proud Boys' tattoo.

White power pledges, breakfast cereals, and masturbation may at first appear as adolescent pranks, but in the context of Trump's America, they are all too

¹⁵ Thanks to Ben Meiches for making this point in a conversation we shared at the International Studies Association Northeast Conference, November 2017, Providence, Rhode Island.

¹⁶ For more on the Proud Boys, see the Southern Poverty Law Center, which categorizes them as a hate group.

serious. As initiation rites, they adhere to Theweleit's analysis of the bodily practices of proto-fascist groups. By staying calm during beatings and limiting masturbation (making the body rigid), Proud Boys aim to enhance their masculinity, and in turn become more successful with "real" women, who nevertheless remain, as among the *Freikorps*, off-screen and imagined figures who threaten humiliation. Lurking behind the tactics of rigidity is a sense of personal failure; a shared frustration among white men who have struggled to find a housewife willing to receive their veneration. Chace, who interviewed group leaders, explains that rigidity seemed to function as an inspiration that would get the men to "go out, talk to women, and then marry them, procreate, be strong American family men, help restore the natural order of things that had been knocked out of whack by feminism."

Although many far-right groups, including the Proud Boys, may not explicitly organize around fossil fuels, it is important to consider their misogynist rigidity in relation to the fossil-fueled excesses pursued by their revered leaders. Seen through the lens of Theweleit, the contrast between Trump's groping, Pence's patriarchal purity, and the Proud Boys' #nowanks is not as contradictory as it might appear. Trump alone can flow. With his supermodel wives and rumored affairs with porn stars, he lives out his followers' fantasies.¹⁷ But the vicarious release of frustrated patriarchal vigor through the authoritarian leader's sexual prowess represents only one method of rechanneling desire. As in Theweleit, the more intensely one's own productive desires are dammed up, the more one longs for the violent, explosive release of flows elsewhere: destructive flows in place of productive ones.

Petro: both hard and soft. Both the solidification of toxic masculinity and the grimy, deathly flows (oil, gas) let loose as psychological compensation for that self-discipline. Like the *Freikorps*' cruelty, or the clamor to torture detainees after September 11 analyzed by Robin, burning fossil fuels in an age of global warming can offer a compensatory practice of violence. Fossil fuel systems provide a domain for explosive letting go, and all the pleasures that come with it – drilling, digging, fracking, mountaintop removal, diesel trucks. In the words of Sarah Palin, "drill, baby, drill!"

17 Moreover, his outsized role in the psychological lives of his most devoted followers means he must be the stable genius that he claims to be, despite all evidence to the contrary. Fromm explains that this kind of "blind admiration" is logically necessary to masochism: "If the person who rules over me is so wonderful or perfect, then I should not be ashamed of obeying him. I cannot be his equal because he is so much stronger, wiser, better, and so on, than I am" (164). If Trump is shown to be imperfect or merely normal, then submission to his rule would be humiliating.

Helpfully, the aesthetics of fossil fuels – most particularly oil – are ripe for recoding as expressions of sexualized power and orgasmic satisfaction. The parallels between rape and extractivism have been well documented.¹⁸ Stephanie LeMenager writes of “oil’s primal associations with earth’s body, therefore with the permeability, excess, and multiplicity of all bodies,” such that “the spectacle of [oil’s] gushing from the earth suggests divine or Satanic origins, a givenness that confers upon it an inherent value disassociated from social relations” (92). In Upton Sinclair’s novel *Oil!*, too, LeMenager observes how a gushing well becomes an orgasmic woman (“There she came!”), while “for a thirteen-year-old male narrator, industrial-scale pollution and waste translate into arousal and premature ejaculation” (93).

A psycho-political understanding of authoritarianism, and its demand for masculine rigidity, points to the social function and pay-off gleaned from such petro-sexual violence. For example, fossil fuel industries have taken ample advantage of gendering fossil fuels in this way. Shannon Elizabeth Bell describes how, even as the coal industry provided fewer benefits to Appalachian communities, it worked to sustain community support through an influential “Friends of Coal” public relations campaign. Friends of Coal traded heavily in traditionally aggressive masculine symbols, tying coal to football, the National Association for Stock Car Auto Racing (NASCAR), hunting, fishing, the military, and other “provider and defender” icons, such that “by reinforcing the hegemonic image of the working-class provider as a man, and a particularly *masculine* man, the images in this commercial lubricate the process of the coal industry’s becoming synonymous with the family provider” (Bell 98–100). Similarly, Trump’s professed love for coal is most often expressed through the discourse of putting miners to work, a promise that resonates strongly with a community primed to associate mining jobs with masculine identity. In other words, Trump and his supporters “dig coal” (a popular campaign slogan) because it is an icon of masculinist empowerment.

Another recent trend, “rollin’ coal,” exemplifies fossil fuel violence experienced as masculinized power. Rollin’ coal means retro-fitting a diesel truck so that its engine can be flooded with excess gas, producing thick plumes of black smoke. Coal, which is not actually burned, functions as a symbol of industrial power expressed as pollution. The truck becomes its own mini-factory, complete with belching smokestacks; the driver becomes a coal baron. Rollin’ coal has long been popular in the world of diesel truck racing, but in 2014, the practice emerged

¹⁸ For example, in Carolyn Merchant’s path-breaking *The Death of Nature*, she describes the sexual imagery of “penetrating” nature that “legitimizes the exploitation and ‘rape’ of nature for human good” (171).

on roadways as a conservative protest against environmentalism, the Environmental Protection Agency (EPA) and, soon after, anti-Trump protesters.

It is difficult to estimate its frequency, but rollin' coal has become common enough that some states, including New Jersey, Maryland, and Colorado, have passed legislation specifically banning the practice (Greenstein et al.; Coram and Ginal; "Vehicle Laws"); the Colorado Department of Public Health and Environment also set up a "smoke school" that trains police officers in enforcing the ban ("Smoke Opacity"; Tabuchi). Instagram has over 300,000 posts on two of its largest rollin' coal streams ("#rollingcoal"; "#rollincoal"), while tens of thousands of user-generated videos show (mostly) men blasting smoke at bikers, protesters, and hybrid cars, especially Priuses, as "Prius repellent" against hybrid cars that have become widely recognized as symbols of green consumerism. Gender and race also play a role in target selection: it has become common to roll coal at "rice-burners" (Asian-made cars) (Weigel) and unsuspecting female pedestrians.¹⁹ One commentator fittingly referred to these videos as "pollution porn" ("Rollin' Coal"). Hypermasculine discourse surrounds the practice ("It's just a testosterone thing. It's manhood," Sean Miller told *Slate* magazine) (Weigel).

Spectators and coal rollers express pleasure in the noise, the smell, and the beauty of the smoke, all of which give them a sensation of power that, not coincidentally I suggest, is directly related to the smoke's violent effects. One man told *Vice News* that people roll coal because it feels good: "When you sit there and you can hear and you can see the horsepower, it does something to people around here. It makes them giddy. It happens naturally, but there's an awe effect" (Wyler). The *Denver Post* described rollin' coal as "a way to have fun at the expense of other people" (Finley) – a fitting description of the desires animating petro-masculinity.

Whether it is the Proud Boys who proclaim white, Western chauvinism, or the coal rollers who revel in conspicuous pollution,²⁰ Trump's brand of fossil authoritarianism feels good because it bursts the constraints of liberal, Western hypocrisy. Despite the occasional pretense of innocence, fossil authoritarianism gets its kicks precisely because fossil fuel consumption has become undeniably destructive in an era of global warming. Controlling fossil fuels, and being controlled by fossil fuels, comes to feel good as a practice of power/being overpowered, especially because it has become a game of life and death, of flirting with apocalypse. Fossil violence is brought into the light and celebrated – a welcome respite from the guilt, resignation, and often paralysis that otherwise grip the

¹⁹ This theme recurs in YouTube videos. See, for example, 'Hot Girl in Bikini'.

²⁰ Sociologist Lisa Wade coined this term in reference to rollin' coal.

West in the face of global warming. The circle of concern has been narrowed, in a satisfyingly simple moral taxonomy, to the pleasures of the white *paterfamilias*, who will be the sole guarantor of the welfare of his legitimate household members (e.g., white women, pets, trucks, white children, white neighbors). The *paterfamilias* is justified in using every tool at his disposal – coal, oil, survivalist bunkers, guns, border walls – to secure his household against insurgent others.

When petro-masculinity is at stake, climate denial is thus best understood through desire, rather than as a failure of scientific communication or reason. In other words, an attachment to the righteousness of fossil fuel lifestyles, and to all the hierarchies that depend upon fossil fuel, produces a desire to not just deny, but to refuse climate change. Refusing climate change is distinct from ignoring climate change, which is effectively what many people who otherwise acknowledge its reality do (Norgaard). Ignoring can be dangerous, too, but it is a passive disposition, often connected to emotions of frustration or confusion, or even fear. Refusal is active. Angry. It demands struggle. In the case of climate change, by refusing it, one also subscribes to an accelerated investment in petrocultures. Refusal can no longer rest at defending the *status quo* but must proceed to intensifying fossil fuel systems to the last moment, which will often require resorting to authoritarian politics.

The concept of petro-masculinity alerts us to additional psycho-political catalysts that might fuel armed lifeboat politics in the West. More specifically, authoritarian desires are likely to be aroused not only by the appearance of the Other at the gates – e.g. climate refugees from the global South – but also as a reaction to perceived enemies within the state, both human and nonhuman. This can include poor people of color in hurricane-ravaged cities like New Orleans or Houston, or feminist and ecojustice movements as they strive to undermine toxic masculinity and fuels; it might also include global warming, mega-storms, ocean acidification, fish die-offs, and other phenomena that appear as an affront to fossil fuel resilience. In addition to the possibility of violence levied against the poor, we should also be alert to moments in which gender-based and climate change-induced violence appears simultaneously, wherein the reinforcement of gender binaries or heteronormativity works alongside the armoring of lifeboats.

Conclusion: Fossil Fuel Violence and Misogyny

Fossil-fueled life has always been violent, but much effort has been expended to make the suffering subterranean and to render it as invisible as possible to privileged American consumers. However, the industrial, capitalist system built to

hide its waste, with its subterranean pipes, shunted refuse, oceanic dumps, and accounting fantasies, is breaking down. Death is overwhelming the seawalls and flooding back into the carefully sanitized cores of privilege. The Western belief in the impenetrable body, and of those bodies being “tucked up like little hobbits into the safety of our burrow,” as Timothy Morton charmingly describes it, has become increasingly difficult to maintain (104).

Leakages can be met with either receptivity or hostility. Most environmentally-sensitive scholars and activists are attempting the former. The goal is to develop an ethics, and an emotional capacity, for living on an earth marked by radical change and periodic mass deaths, while avoiding an escape into either nihilism or transcendentalism (Weinstein and Colebrook). A host of creative proposals are emerging, all of them seeking lifeways that are less anthropocentric and better attuned to death and decay: living “amid the capitalist ruins” (Tsing), “posthumous life” (Weinstein and Colebrook), “learning to die in the Anthropocene” (Scranton), “trying to perish better” (Grove, “Apocalyptic Tone”), “loving your monsters” (Latour), queer futurity and failure, “making kin instead of babies” (Haraway), or embracing art as a form of “grief-work” for “after the end of the world” (Morton).

However, grief work can be decidedly unappealing, especially when avoidance tactics are readily available. The key problem that confronts these proposals is that of desire. While this difficulty is duly appreciated, we have only begun to imagine alternative desiring strategies for the new Earth. The permeability of our bodies and the leaky waste that pervades modern life may be the reality of our existence, and we may even believe that we should attend to them, but they can disgust more than they seduce. As the leakages multiply, and neoliberal tactics falter, the desire to shore up the body, and the state, can become an authoritarian urge, an obsession with a purified future. Life in the ruins is as likely to invoke rage as generosity. Rollin’ coal and other methods of fossil fuel burning become tempting weapons for seeking vengeance against the forces that threaten petro-patriarchal orders.

Fossil violence most obviously punishes the Earth (ever allied to femininity in the Western imagination), but it should also be appreciated as a misogynist tactic, if we follow Kate Manne to think of misogyny not as an individual belief – the hatred of women – but instead as a set of practices, as “the system that polices and enforces” the norms of patriarchal rule (20). Manne argues that the traditional definition of misogyny, as an extreme belief, makes it overly difficult to declare its presence. We become mired in debates over a perpetrator’s true meanings and intentions. However, if misogyny is instead understood as a policing practice, the focus moves from decoding the misogynist’s worldviews to detailing the suffering of its targets, making room for structural as well as direct manifesta-

tions of violence. Using Manne's logic of misogyny, it becomes far easier to recognize, and contest, the pattern of omnipresent aggression experienced by women and others deemed to be gender deviants.

Manne's focus, understandably, is largely on women as the main targets of misogyny, especially when they are perceived to have transgressed patriarchal norms, and/or when they intersect with other marginalized identities (Black women, queer women, or trans women, for example, are at greatest risk). However, I see no reason not to put Manne's helpful reconceptualization of misogyny into conversation with ecofeminism in order to analyze all the other modes of violence committed in the name of policing the norms of white Western patriarchy. This could include some instances of violence against the planet and its oceans, creatures, waterways, and mountains.

To describe fossil violence as misogynistic is not to claim that gendered norms offer a totalizing explanation for fossil fuel consumption and the authoritarianism it underwrites. Instead, it is to recognize that gender identities have something to do with the pleasures of fossil fuel life, and quite a lot to do with the more extreme versions of fossil authoritarianism. Fossil fuel extraction and consumption can function as a performance of masculinity, even as it also serves the interests of fossil capitalism. Similarly, the concept of petro-masculinity emphasizes that global warming may sometimes be interpreted as a breach in the patriarchal dam. It alerts us to the possibility that climate change can catalyze fascist desires to secure a *Lebensraum*, a living space, a household that is barricaded from the specter of threatening others, whether pollutants or immigrants or gender deviants. Taking petro-masculinity seriously means paying attention to the thwarted desires of privileged patriarchies as they lose their fossil fantasies.

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Sheena Wilson

10 Gendering Oil: Tracing Western Petrosexual Relations

This article was originally written in early 2013 and first published in 2014. While some of the specific players – the Prime Minister, Governor General, other social and political actors, and the media campaigns – have changed multiple times in the intervening years, the rhetorical strategies used to maintain power and privilege endure.

By employing a feminist lens to “follow the oil” and trace “the webs of relations and cultural meanings through which oil is imagined as a ‘vital’ and ‘strategic’ resource,” (Huber 36), I wish to interrogate the relationship between human rights and gender and racial equality and the petro-discourses that are newly oriented around ecology. As with many cultural transformations and their associated ideological turns, women’s relationship to oil, to the environment, and to the petrocultures of the twentieth and twenty-first centuries in the West is portrayed in the mainstream media in a limited number of largely superficial ways: first, through women’s rights; second, through consumerism; and third, through the recuperation of the female body as a canvas on which to spectacularize politics.

The latter half of this article focuses on representations that either neutralize or trivialize women’s political and economic relationship to oil, through an analysis of the Ethical Oil media campaign that began in 2010 in Canada, a Beyond Petroleum commercial of the early millennium, *Vogue Italia*’s August 2010 fashion spread called “Water & Oil,” and the general discourse about eco-fashion and greening beauty regimes. These instances demonstrate the way women’s identities have been intentionally constructed to naturalize a particular relationship between Western women and oil. The narratives and gender constructs that inform many advertising and fashion images also function to undermine contemporary women’s more serious engagements with the environment, and as such contribute to a broader array of cultural, rhetorical, and legal efforts to criminalize anti-oil and pro-environmental activism.¹ The first half of this essay discusses the

¹ In 2012, a counterterrorism unit was established in Alberta to protect the energy sector (“Counter-Terrorism Unit to Protect Alberta Energy Industry”). During the summer of that same year, media coverage reported on concerns of alleged environmental terrorism. A July 29, 2012 article cited a “newly declassified intelligence report” stating that there is a “growing radicalized environmentalist faction” in Canada that is opposed to national energy-sector policies:

media reception of two examples of contemporary women's environmental activism – the Idle No More protests in Canada, and Chief Theresa Spence's subsequent hunger strike in December 2012 and January 2013 – in order to establish the cultural and ideological context in which recent representations of women and oil intervene. By examining these forms of activism, I will show how Indigenous women's political activism in the context of mainstream media is reconstructed to the detriment of the resistance movements and to other community members, namely Indigenous men and youth, who risk being constructed as terrorists in discourses of petro-violence.

Chief Theresa Spence and Idle No More: Petropolitics and the Construction of the Terrorist

In the current dominant discourses circulating in Canada and the Western world, environmental messages are controlled and shaped by petro-invested stakeholders seeking increased expansion and exploitation of resources. Within this paradigm, environmentalism, environmentalists, environmental science, and scientists – especially women and minority citizens acting on behalf of environmental agendas – become the targets of media attack, perceived not only as potential obstacles to oil extraction but also as threats to the proliferation of capitalism itself, since oil fuels capitalism.

In the 2010s, environmental activists were increasingly constructed as terrorists. In Canada, on February 2012, the federal government responded to movements resisting oil sands extraction through a sliding semantics that identified these groups and their actors as terrorists. The government-authored report, "Building Resilience Against Terrorism: Canada's Counter-terrorism Strategy," contends that "although not of the same scope and scale faced by other countries, low-level violence by domestic issue-based groups remains a reality in Canada. Such extremism tends to be based on grievances – real or perceived – revolving around the promotion of various causes such as animal rights, white supremacy, environmentalism, and anti-capitalism." By May 1, 2012, Canadian environment minister Peter Kent had also used criminalizing rhetoric to characterize the activities of Canadian environmental groups, claiming that these organizations had

The article states that "RCMP criminal intelligence assessment [. . .] cites potential dangers from environmental activists to offshore oil platforms and hazardous marine shipments, representing perhaps the starkest assessment of such threats by the Canadian security community to date ("Radial Environmentalism on the Rise, RCMP Report Says").

been used “to launder offshore foreign funds for inappropriate use against Canadian interest” (“Environmental Charities”). And, as Indigenous communities have begun to mount more organized protests against the infringement of their treaty rights that are linked to issues of environmental protection and that include barricades and other forms of demonstration, it is important to remain cognizant of what feminist scholar Heather M. Turcotte has already identified as the slippages within “academic and state representations of petro-terrorists, petro-gangs, and victims of gender violence [. . .] that produce the figure of the petro-terrorist-gang-member” (213) for public consumption and foreign policy. It is imperative to consider how these discourses use conflicting representations of women and of feminism in the West that have ramifications for women in Western petrocultures, especially those from racialized communities and other marginalized groups.

Media and advertising tactics performed to minimize women’s relationship to the environment are in direct contrast to the very serious involvements of women actively engaged in environmental movements in Canada and around the world. Robert R. M. Verchick, for example, points out that many of the “most visible and effective environmental justice organizations are led by and consist mainly of women. [. . .] Thus, while ‘environmental justice’ describes an environmental movement and a civil rights movement, it also describes a women’s movement [. . .] a feminist movement” (63). In Canada, as around the world, a significant percentage of environmental activists are women and queer folks, many of them people of color and Indigenous women who are disproportionately impacted by the oil-industrial developments in their communities and climate change.

In her work on the Niger Delta, Heather Turcotte has found that women in petropolitics are typically invoked only as objects of law who struggle against violence in their communities. She theorizes that activist women are naturalized as mothers and grandmothers in mainstream discourses – maternal protectors of the environment “rationalized as unpolitical and external to the political economy” (208). She argues that women’s protests are rearticulated “in ways that omit deeper histories of interconnected state violence and women’s anti-imperialist engagements with state power” (208). By contrast, racialized men are constructed as “terrorists” when active in these same petro-resistance movements that are sometimes initiated or led by women (208). The situation in Canada mirrors this.

The Idle No More movement went public at a 10 November 2012, Saskatoon teach-in organized by four women activists – Nina Wilson, Sheelah McLean, Sylvia McAdam, and Jessica Gordon. These activists were concerned about the effects of a Harper government omnibus bill C-45, which infringed on Indigenous rights (“Idle No More”). Nonviolent political events, including teach-ins regarding the impact of the bill and how it could be opposed (Palmater), then proliferated

across the country and around the world. Chief Theresa Spence of the Attawapiskat band in Northern Ontario intensified public attention when she endured a forty-four-day hunger strike between 11 December 2012 and 24 January 2013. These two actions, often conflated, led to broad public discussion of environmental and Indigenous issues. Chief Spence made headlines fighting for better educational opportunities and living standards for her community beginning when she became a chief in 2006. In spite of this, the media represented her as an incompetent and corrupt Indigenous leader, building on racist tropes as well as stereotypes around abuse of power by Indigenous politicians and elected officials. Mainstream media rewrote her principled political activism as a “detox diet” having ramifications on her health (Kay), rather than respectfully positioning it within the long tradition of hunger strikes and other passive non-violent resistance movements. Twelve of the thirteen points that she made to the Canadian government in her Declaration of Commitment² have been largely overwritten. Only one demand became highly visible: her desire to meet with Prime Minister Harper and Governor General David Johnston. This became the subject of much public debate and deflected focus from the issues at the heart of Spence’s protest, positioning her as somewhat obstinate. Like the Idle No More movement, the remainder of Spence’s concerns were centered on the omnibus bills C-38 and C-45, which undermine aspects of Section 35 of the Canadian Constitution, and Indigenous treaty rights and ways of life in Canada. However, they were rarely, if ever, fully explained by the media.

Meanwhile, the mainstream media provided space for male Indigenous leaders to declare that “It’s time for the men to step up” (Campion-Smith). And the political discord within the Indigenous movement and its leadership was given significant attention. This media focus rhetorically constructs Indigenous struggles and debates as signs of the inability to organize and an ethno-cultural group turning in on itself – as opposed to the very common leadership conflicts any group faces when dealing with political issues. Opponents of the Idle No More youth movement that Chief Spence helped inspire worked to undermine it through reports that its leaders “appear to have little control over the direction of the movement.” They linked the movement itself to violence: violence initiated by “aggressive elements within the existing Aboriginal leadership structure” and violence against Aboriginals that rhetorically blames the victims for stirring up racist reaction (Ross). Newspaper headlines read, “PM Harper believes Idle No More movement creating ‘negative public reaction,’ say confidential notes” (Barrera). The gang-rape of an Indigenous woman in Thunder Bay, Ontario, on 27 Decem-

2 For Chief Teresa Spence’s Declaration of Commitment see Brown.

ber 2012, which initially received minimal attention from mainstream media, was finally reported on *The Current*, a major Canadian radio broadcast, on 25 January 2013, but it was contextualized by an introduction that placed the onus on the movement and not on the history of colonialism and racism: “Idle No More is inflaming long-standing tensions between Aboriginal and non-Aboriginal communities. In Thunder Bay, police investigate a possible hate crime and the mayor regrets that his plan to keep people safe has failed” (McCue). This rape is relevant to the Idle No More movement because, as it was reported, “During the attack the men allegedly told the victim it wasn’t the first time they had committed this type of crime and ‘it wouldn’t be the last.’ She [the victim] told police they [the attackers] also told her, ‘You Indians deserve to lose your treaty rights,’ making reference to the recent Idle No More events in Thunder Bay” (Taliman). This attack and another alleged “starlight tour” reported in the CBC broadcast,³ while part of a long history of violence against Indigenous women and men, inspired fear in Indigenous communities and were used to suggest that youth might be safest distancing themselves from the activism of the Idle No More movement (“No More Stolen Sisters”). The association between the violated female body and the movement functions to spectacularize and market petro-violence to the media-consuming public as a reaction to the Idle No More resistance movement rather than as endemic to the legacies of colonial logic, human rights abuses, and gender-sexual violence on which Western petrostates are founded. This is but one manifestation of how the appropriation of women’s political power can create dangerous outcomes for entire communities. The foundations for these practices are outlined in the following section, which analyzes how the frameworks of consumerism and petrofeminism have defined women’s relationships to oil in such a way as to naturalize imperial and neoliberal agendas.

3 “Starlight tours” refers to the unofficial police practice of dropping people, often Indigenous people or other marginalized individuals, outside of city limits in what are often intemperate and life-threatening Canadian weather conditions, forcing them to walk back to the city or home. On 7 January 2013, CBC Radio ran a report about a local man who was driven to the edge of town by police in Thunder Bay, Ontario. The report speaks of the history of this practice (“Starlight Tours”). On 21 January 2013, a young First Nations man in Saskatoon, Saskatchewan, was reportedly driven outside the city limits and told by officers to “Idle No More.” (Giles)

Western Petrocultures, Women, and Minorities

The histories of feminism and oil are intertwined.⁴ In the century and a half since oil's potential as a major energy source was first discovered and harnessed, a world oil industry has emerged to transform the distribution of world power between nations, the everyday lived reality of all citizens of the Western world, and increasingly the daily experience of people across the globe. The age of oil in the West is virtually synchronous with the women's rights movement: after similar periods of development, both the oil industry and the Western women's rights movements had gained significant momentum by the early twentieth century. In this same moment, photography began to be used as a tool to construct new feminine identities for the public imaginary that have promoted certain concepts of beauty, domesticity and housewifery, motherhood, personal and family hygiene, and women's autonomy. Alternately affirming and contesting these concepts, women's rights movements and women's lives have transformed over the last century of the age of oil; many of these transformations can be attributed directly to industrialization and the petroleum-related innovations that came to define gender dynamics and gender roles in Western petroculture(s). The age of oil is rife with ironies that have resulted in both feminist advances as well as the reinforcement of long-standing patriarchal conceptualizations of woman as object and as property, popularized through the pervasiveness of the female image as it has been recuperated by capitalist, consumerist, neoliberal discourses of the late twentieth and twenty-first centuries.

There are a number of visual and rhetorical tropes that position women's relationships to oil – particularly those of Western, white, middle- and upper-class women – in consumer terms. These tropes build on historical practices that have linked women to social and cultural developments by targeting them as consumers and as commodities – the consumer consumed. Women have long been identified as major consumers of petroleum products – fashion products being one example. “Ecofeminism” in mainstream popular media has come to be signified by reductive and trivial issues. Magazine and new-media headlines ask questions such as “Are you a Green Beauty?” “What's your clothing's footprint?” and “Are you an eco-fashionista?” (“Quizzes”) Advice is given about “How to Go Green: Fashion and Beauty”. In the Western cultural practice of reducing women's social engagement to consumerism and the neoliberal practice of Starbucks logic, as Sla-

⁴ The Seneca Falls women's rights convention was held in New York in 1848 (“Women's Rights Convention in Seneca Falls, NY”). Ten years later, in 1858, the first commercial oil well was established in Oil Springs, Ontario (“Black Gold: Canada's Oil Heritage”). A year later, an oil rig in Pennsylvania struck oil (“The Story of Oil in Pennsylvania”).

voj Žižek has called it, consumerism and social justice are collapsed into one act through “products that contain the claim of being politically progressive acts in and of themselves [. . .] [and in which] political action and consumption become fully merged.” And this logic – Starbucks logic – expresses itself in gendered ways. Specifically, in relationship to petroleum and oil, this logic reinforces patriarchal social, political, and economic norms.

This consumerist logic is neither new nor is it restricted to maintaining the petrocultural status-quo. Similar instances might include the use of anti-animal testing labels on cosmetic products to increase sales, or capitalist co-optation of the grunge movement’s ironic or distorted cultural refraction of the global anti-poverty movements of the last several decades, whereby designers sell a spectacle of scarcity. These trends disguise consumption as political awareness or even activism and elide discussion of the more systemic and infrastructural processes that imbricate oil, our capitalist economy, and our culture in ways that are much more complex to untangle than simply purchasing petroleum-free mascara.

This practice of both objectifying women, particularly middle- and upper-class white women, as consumable products and supposedly empowering them as consumers themselves, through fashion and beauty products, translates into a performance of political engagement both as the eco-fashionista with a green wardrobe and green cosmetic bag and as the often dehumanized object onto which social resistance is draped, projected, and performed as a commercial strategy in the guise of political resistance. Western women’s relationships to petroleum have been constructed in the social imaginary as a site of spectacle through which resistance to petroculture is signified yet undercut.

Canada and the Ethical Oil Billboard Campaign: Gender, Sexual Relations, and Colonialism as Petro-Discourses

Ezra Levant, a conservative Canadian media personality, published the book *Ethical Oil: The Case for Canada’s Oil Sands* in 2010.⁵ This book promotes a right-wing, pro–Canadian-oil-sands vision for the country. Indeed, Levant was at one time, around the new millennium, a political candidate in the same party as Stephen

⁵ This section borrows and builds on ideas previously published in Sheena Wilson, “Ethical Oil: The Case for Canada’s Oil Sands, Review.”

Harper⁶ – Prime Minister of Canada from 2006–2015. In his work, Levant uses polemical and prejudiced vocabulary to characterize foreign interests and the nationals of multiple countries. In fact, Levant has a history of publishing pejorative material.⁷ Furthermore, the book targets certain ethnic groups within Canada, including Indigenous peoples. The rhetoric first promoted by this book was sustained through a website, EthicalOil.org, started by Alykhan Velshi. In 2011, Ethical Oil also ran a media campaign that included billboards and television commercials (also made available online). The campaign explicitly rebranded Canadian oil/tar sands oil as an ethical source of oil.⁸ This reoriented the public debate in Canada away from a discussion of the environment and toward a discussion of oil's foundational and integral role in Canadian national identity in a way that continues to echo in public discourse, by fetishizing oil as a national resource linked to Canadian pioneerism and innovation, ingenuity, and integrity, as well as Canada's international reputation as a liberal democratic peacekeeping nation with an excellent human rights record.⁹

6 In 2002, Levant was nominated as the Canadian Alliance candidate in the Calgary Southwest riding, but he stepped down so that Stephen Harper, who had been elected party leader, could run in that riding. This led to the eventual election of Harper, leader of the Canadian Conservative Party, as Prime Minister of Canada (Taber).

7 Levant has had various complaints brought against him: both human rights complaints for the publication of the Danish cartoons of the Prophet Muhammad in 2006 and for making false claims about George Soros, to name two examples. In March 2014, yet another lawsuit was filed against Levant, this time for \$100,000, related to blog posts he made that allegedly damaged the reputation of a Saskatchewan lawyer by labeling him a “jihadist and a liar” (“Sun News Host Ezra Levant Sued”).

8 The Ethical Oil organization misappropriates terms and ideas, such as “grassroots” and “fair trade,” that are typically associated with left-leaning social justice agendas, for the purpose of supporting a right-wing neoliberal agenda focused on promoting the expansion of the oil industry in Alberta (Wilson, “Ethical Oil” 8–9).

9 This redirection in public debate was certainly evident in Alberta and in Canada starting at the time of the book's release in the fall of 2010, and for the subsequent two years, 2011 through 2012. The book and its author received significant attention at the time of the book's release, and the ethical oil message was further perpetuated by the associated EthicalOil.org website. The site's “About” page explains that “EthicalOil.org began as a blog created by Alykhan Velshi to promote the ideas in Ezra Levant's bestselling book *Ethical Oil: The Case for Canada's Oil Sands*” (“About”). Furthermore, in mid-2011, the Ethical Oil organization released a billboard campaign and, later that same year, a thirty-second television advertisement that, by early September, had attracted international attention and a response from the Saudi government for the way that it juxtaposed women's rights in the two countries and, through this faulty logic, thereby asserted the superiority of Canadian-produced oil as ethical, stigmatizing Saudi oil as conflict oil.

The campaign links what are apparently disparate issues in ways that rely on the preexisting sociocultural fetishization of oil as a thing, with powers that make it capable of changing the nation. In this case, the Ethical Oil campaign imbues the oil sands with the potential to redirect power toward good and ethical ends – the propagation of multiculturalism, for example, or the advancement of the Canadian dream, a ubiquitous myth linking economic expansion with personal and financial fulfillment. Playing on historical identity tropes and the myth of the Canadian nation, Levant simply affirms what Canadians wish to believe about themselves, and he does so by weaving oil into the social, political, and economic fabric of the nation.

These popular beliefs about multiculturalism and racial and gender equality became the focal point of the Ethical Oil billboard and television campaign of 2011. It juxtaposed images meant to represent foreign female nationals with images of white and nonwhite Canadian women as a strategy to reinscribe oil into the national myth, placing them side by side. The concept of saving foreign women in this campaign invokes a power-discord that rhetorically positions and visually reinforces for all Canadians the narrative myth of nation whereby Canadians are benevolent, tolerant, democratic protectors of human rights. On one of the billboards, the image on the left half appears under a red-banner heading that reads “Conflict Oil” with a secondary red-banner message, “Conflict Oil Countries: Women Stoned to Death,” superimposed over the black-and-white image of a burka-clad woman being buried alive in preparation for stoning. The image on the right half of the billboard is a color photo of the female mayor of Fort McMurray, the largest urban center in the oil sands region of Northern Alberta,¹⁰ in a graduation gown. Her picture appears under the green-banner message “Ethical Oil” and the second green-banner message superimposed over the middle of the image reads “Canada’s Oil Sands: Woman Elected Mayor.” Her identity is emphasized in the fine print in the bottom right-hand corner of the graduation photo that reads “Mayor Melissa Blake.” By contrast, the woman in the left-hand photo is not identified. According to various sources, this image dates to either the 1970s or 1980s, and the female subject is an Iranian woman. However, the billboard itself provides no such context.¹¹ This burka-clad woman simply stands in as a synecdoche for the perceived oppression of women in Muslim areas of the world.

10 Fort McMurray is not officially a city but part of the Regional Municipality of Wood Buffalo in Northern Alberta.

11 According to a 20 July 2008 news article published by Radio Free Europe/Radio Liberty online, the article is from the 1980s (“Nine Iranians Sentenced to Death by Stoning”), however, *The Globe and Mail*, a major Canadian newspaper, claimed the image was from the 1970s (“In Pictures”).

The visual rhetoric of this billboard not only situates foreign women in a position of victimization where they must be rescued,¹² but it also validates the status of Western women. This is a form of petrofeminism whereby women's rights are used to justify imperial, extractive foreign policy, often in the form of political or military intervention by Western nations into the affairs of oil-rich nations. In this paradigm, women's liberation from traditional private-sphere roles becomes the only evidence required or necessary to demonstrate the superior status and civilization of Western nations, despite the ongoing feminist struggles of women in the twenty-first-century West.

This billboard promotes a variation on the themes of petrofeminism and consumerism as social justice. At the bottom of the billboard, another green-banner message reads, "Ethical Oil. A Choice We Have to Make." The color codes of red and green make evident that viewers are being encouraged to choose – or rather that they have no choice but to choose – Canadian oil-sands oil for ethical reasons that link Canadian Oil, by proxy, to women's rights. The billboard is not a direct call for war or invasion in the name of women's rights, although one could easily argue that it is a tentative step toward that, as political-media attention has increasingly highlighted tensions with Iran over its nuclear program and "the threat posed by Iran to Middle Eastern oil supplies" (Wright); however, as a reaction to women's oppression, it calls for embargo, even if only at the level of individual consumer choice. The use of the Iranian woman's image is an example of what Turcotte theorizes as the "uncritical representation of gender violence in other geopolitical locales [that suppresses] the state's simultaneous and daily consumption and violation of women for its own nation-building practices" (204). The use of the foreign burka-clad woman is part of a larger rhetorical practice that fails to read and understand exceptional moments of gender violence in Other contexts and instead invokes these images of violence against women because they sustain the Western narratives of foreign-woman-as-victim. As Turcotte argues in regards to the United States, locating violence against women in other places "obscures and denies the dismal histories of gender and sexual violence endemic to the United States" – or, as I would argue, in the West in general – and the "consequent 'rescue narratives' demand victimized 'third world women' [. . .] must be saved from 'ethnic' perpetrators" (204). In the Canadian context, the Ethical Oil campaign is written into an accepted history of petropolitics that justifies the suppression of Other peoples (domestically and internationally) and the invasion of foreign nations – for the purpose of gaining control of petroleum resources – by invoking

12 For a more specific discussion and definition of "embedded feminism," albeit in a different context, see Ganser.

the national myth of Canada as a defender of human rights. This billboard implies, through its false logic, that Canadians can choose continued security and freedom not only for Canadian women but also for foreign women by supporting Canadian oil. Resisting the oil sands industry, within this visual rhetorical frame, becomes akin to supporting female repression in other regimes, to supporting terrorism as it has been loosely defined in the post-9/11 era, and to forsaking the advances of Western feminist movements. The consumer “choice” provided by the artificially constructed parameters of this campaign justifies the perpetuation of Western oil-consuming lifestyles driven by current petro-economies as a strategy to shift the discussion away from environmentally focused critiques of the oil sands industry and its planned expansion.

Considering this billboard campaign within the context established by the book *Ethical Oil: The Case for Canada's Oil Sands*, with its blatantly racist, imperialist, and sexist language, adds another layer of meaning to the visuals. Take, for example, the billboard that juxtaposes the image of a beautiful and smiling Indigenous woman dressed in oil-rig garb, her head tilted and looking beatifically upward to the left from under an Esso hardhat, protective industrial eyewear, earmuffs, and overalls. The green-banner messages read “Ethical Oil” and “Canada's Oil Sands: Aboriginals Employed.” This is paired with the red-banner messages of “Conflict Oil” and “Sudan's Oil Fields: Indigenous Peoples Killed” superimposed on the image of militiamen walking through the desert with a human skull in the forefront of the image. The Indigenous woman's presence in the billboard campaign appropriates her identity at two levels. Her sexuality and ethnicity are employed simultaneously as tools of erasure in at least two ways: by preempting potential criticism of the rampant gender inequality in the oil industry by creating a simplified visual claim that women do benefit financially from oil-field employment, and by undermining the ongoing collective criticism and resistance against oil industry expansionism coming from Indigenous communities in Northern Alberta and elsewhere in Canada. This image visually reinforces Levant's scathing criticism of Indigenous (First Nations, Métis, and Inuit) resistance to the oil sands as hypocritical and unjustified because he claims that the oil industry provides jobs and fiscal return for Indigenous communities.¹³ This image of the young Indigenous woman reinvents the Canadian oil industry, and by proxy Canada itself,

¹³ Levant provides an inflected critique of Chief Al Lameman, and by proxy all other Aboriginal people who contest the oil sands, in the book *Ethical Oil*. Levant writes: “Of course, oil sands firms are careful to make sure they stay on good terms with Aboriginals in the area, even if a few noisy malcontents like Beaver Lake Cree chief Al Lameman figure they'd rather sue the industry. [. . .] They've unilaterally declared themselves to be the sole 'keepers' of an enormous swath of land that crosses the border between Saskatchewan and Alberta. But Lameman and his

as a site of gender equality, in contrast to the alleged misogyny and sexism found in other countries. The image also aims to create doubts about the pervasiveness of anti-oil sands attitudes among Indigenous peoples and to raise questions around the legitimacy of these communities to resist treaty breaches that disrupt traditional practices on Indigenous lands. However, by this same economic logic, all citizens of the global West, if not the entire world, can be silenced into complicity due to the way petroleum has shaped our daily lives and the global economy. This is not the case, nor should it be, in light of increasing evidence of environmental impact that has inspired a demand for change from across the political spectrum. Nevertheless, this oversimplified visual and rhetorical strategy attempts to weaken public sympathy for Indigenous resistance against the environmental impacts of the oil industry.

Prior to and during the period of the Ethical Oil billboard campaign, a number of Indigenous communities publicly resisted industrial encroachment on their land and exposed the impacts of air, water, and land pollution in the area of Northern Alberta. At the time of the campaign, there were also several environmental groups and activists making headlines with their anti-tar sands protests both in Canada and around the world. Rather than address these issues that involve both human rights and environmental concerns within Canada, the Ethical Oil campaign resituates petroviolence and human rights abuses outside the Canadian context. Situating the Indigenous body – both the beautiful female in the “Aboriginals Employed” billboard and the ethnic male, potentially Indigenous, in the “Good Jobs” billboard discussed below – within the neoliberal infrastructure of the petroleum industry serves to invisibilize the Indigenous bodies that resist the oil sands and the oil industry. In doing so, protests against fossil fuels that demand social and eco-justice are redefined as petroviolence. The activists in these movements are also easily reinscribed as terrorists.¹⁴

reserve are not keepers of that massive swath of land in any meaningful way; they don't tend to it; they don't look after it or protect it; they don't improve it or develop it, and they certainly don't work it. They just claim it for themselves. Keepers is right. If Al Lameman has his way, he'll end up keeping thousands of Aboriginals from improving their lives, getting an education, escaping poverty. All of those jobs, all that education, all those opportunities ended, all for one band” (213–15).

14 Turcotte discusses at length how, in the context of the Niger Delta, the reporting of and even the academic analysis of “ethnoracial, national, and gender-sexual inequalities within and between Nigeria-UK-US relations” have misidentified petro-protests as terrorist activities, in part because there has been a failure to recognize the degree to which these movements “developed out of strategies of community justice within women's organizations. These were neither ‘terrorist acts’ nor the community ‘turning in on itself’ but, rather, expressions of justice often sup-

The racist underpinnings of the appropriation of the Indigenous female figure and Indigenous identities in general become even more explicit within the context of the other stereotypical and reductive billboard messages that were included in the campaign. First is a billboard that, on the left, declares “Conflict Oil” and “Dictatorship” over a collage of the flags of Saudi Arabia and Iran, with faint superimposed images of Ayatollah Khomeini and President Ahmadinejad¹⁵ overlaid on the flag of Iran, all contrasted against the message on the right side of the billboard that features the Canadian flag lying behind green-banner messages of “Ethical Oil” and “Democracy.” Another billboard represents the dichotomy of the red-banner messages, “Conflict Oil” and “Forced Labour,” (Hickman) with an image of Hugo Chávez, versus the green-banner messages of “Ethical Oil” and “Good Jobs” visually supported by the image of a young pleasant-looking man, quite possibly Indigenous. Yet another billboard presents “Conflict Oil” and “Degradation” using the image of a Black man walking through a muddy or oily field, in an unknown foreign country, gesturing toward a large fire burning in the background, which is then contrasted with the green-banner messages of “Ethical Oil” and “Reforestation” overlaid on an image of someone standing in a wooded area. In Alberta, this evokes oil-industry reclamation projects, such as Syncrude’s remediation projects in Northern Alberta. Yet another set of red-banner messages reads “Conflict Oil” and “Funds Terrorism,” juxtaposing a photograph of the back of someone’s head, clad in a Saudi Arabian keffiyeh and looking into the distance at an oil rig, with the adjacent green-banner messages “Ethical Oil” and “Funds Peacekeeping” superimposed on the image of a Canadian peacekeeping monument. Photographed from below so as to heighten its majestic appearance, this sculpture is silhouetted against a blue sky and accompanied by a Canadian flag blowing in the wind. A final billboard pairs “Conflict Oil” and “Persecution,” substantiated by the image of two blindfolded men being prepared for hanging, on the left, paralleled by the green-banner message on the right-hand side that reads “Ethical Oil” and “Pride,” visually substantiated by two interlocking male hands, clasped together, each with a rainbow bracelet at the wrist.

In these simplistic binary arguments, the Ethical Oil campaign reveals the gendered and racialized messages that have been naturalized as part of Canadian, and broader Western, petrocultural narratives. Read together, the various billboard images that make up the Ethical Oil campaign promote a set of stereotypes whereby foreign women of color are figured as victims of horrific violence,

ported by male youth groups, which created spaces through which community engagement could address inequalities” (208).

15 Mahmoud Ahmadinejad was president of Iran from 2005-2013.

Canadian Indigenous women are recuperated as symbols of Western gender and ethnic equality and representatives of the progressive employment practices of the oil industry, and white Canadian women are celebrated as civic leaders and symbols of democracy. These images obfuscate the historical, ongoing, systemic, and cultural racism against First Nations peoples in Canada and overwrite the very low percentage of female politicians.¹⁶ By focusing on gender-sexual violence and inequality elsewhere, the campaign accomplishes what Elizabeth Swanson Goldberg has identified as the practice of creating markets of violence for consumption that erase these issues within the nation-state.

BP Television Commercial: Trivializing Women's Relationship to Oil

The use of women's images in the Canadian Ethical Oil campaign is one manifestation of a larger petrosexual discourse that recuperates the images and roles of Western women in reductive ways that trivialize women's relationship to both oil and the environment. The ongoing cultural narrative defines women as either consumers or as bodies onto which politics can be projected and performed. Therefore, the popular media inundates women with a barrage of petroleum consumer products and services that they should wear, buy, or surgically implant; this also includes media messages around what products women should not consume, thereby defining ecofeminism not as a political stance that requires serious engagement and action, but as a consumer choice.

One such example is a BP television commercial of the early millennium that revises a series of identity tropes to promote the fantasy of the "new BP," no longer "British Petroleum" but "Beyond Petroleum." This media campaign was designed to reinvent BP's image as a good corporate citizen, part of the global environmental solution, and part of a team of social and technological innovators. The commercial both begins and ends with slight modifications on the phrase "beyond darkness there is light," represented through a light bulb in the opening sequence and by placing the viewer in the position of a speeding train rushing through a tunnel and bursting into daylight, suggesting invention, modernity, and progress. However, within this visual and narrative frame, the viewer is also pre-

¹⁶ According to the database for "Women in National Parliaments" based on information from 190 countries, last updated 31 October 2012, Canada ranks 47th in the world for female participation in the "lower or single house" with a percentage of only 24.7. Afghanistan, by contrast, ranks significantly higher in 37th place, with 27.7 percent participation.

sented with a number of problematic racial and gender stereotypes. Innovation and environmental citizenship are constructed in relationship to women and people of color in anything but new or forward-thinking terms. The commercial's initial image is of a young woman, in black clothing, wearing black lipstick, her hair dyed black, and with multiple piercings and tattoos. The narrator explains that "behind a thorn, there is a rose." Through a rapid time-lapse sequence, we see this same woman stripped down and transformed into what the commercial presents as her natural self: a young, smiling, blond beauty, whose pouty, glossed lips and subtle head movement seem to suggest that she is flirting with the camera. Both identities are stereotypical, but the one that resists conformity, by the commercial's logic, is reinvented to accord with classic female beauty standards: white, youthful, innocent. Another time-lapse sequence illustrates an increasingly pregnant woman who eventually holds a child, looking down on it in the classic mother-child embrace – like Mary gazing on the infant Jesus in an iconic Madonna and Child pose. This is paired with the message "Beyond patience, fulfillment," which visually establishes motherhood as the ultimate goal for women. Furthermore, this mother, a woman of color, is depicted in the nude, which in the common stereotyped semiotics of advertising, represents proximity to nature. This stands in direct contrast to the white woman in the "Beyond Pain, Joy" sequence, who embodies artifice and represents a higher class. For the white woman, "pain" is represented by breast-implant surgery, and "joy" by standing in a low-cut black cocktail dress. She is objectified as the camera zooms in, focusing on her cleavage. In this heteronormative visual economy of male spectatorship, "joy" refers to her presumed pleasure at being admired as an object of beauty.

Race in this commercial is represented in equally reductive terms. All the faces flashed in sequence during the word "disease" are Asian, harking back to xenophobic rhetoric that has cyclically resurfaced over the last 150 years, in Canada and the West, through public nomenclature used as part of public health campaigns. This commercial was produced in the first few years of the new millennium, when the predicted Asian flu pandemic of 2000 that never materialized was worldwide news for months. Also problematic is that the young male doctor featured during the word "cure" is also Asian, perpetuating other stereotypes around race and intelligence, and the idea of model minority groups. The fastest runner is represented in the commercial by a black male. Read positively this visual text reminds viewers of black track-and-field medal winners; however, this simplistic image also reinforces tropes of black physical prowess that justified the historical slave trade and the ongoing oppression and exploitation of people of color. By contrast, white men in the commercial have either trivial problems – one is out of toilet paper, and the other has locked his keys in the car – or they are visually signified as important, located as part of the military industrial com-

plex, through terms of “power” and “responsibility,” and scientific innovation illustrated by a nuclear explosion.

This commercial, which claims innovation and progress as part of BP’s branding campaign, in fact makes recourse to the accepted status quo, particularly as it pertains to gender roles and stereotypical ethnic and racial identities. Innovation is not required; merely the narrative and visual implication suffices to invent an identity linked to innovation – Beyond Petroleum.¹⁷ These rhetorical moves function to bolster the mythical value of oil, to fetishize oil, by crediting it more generally with the wonders of life, both those that are natural manifestations (motherhood, for example) as well as those attributed to science and innovation (nuclear energy). This discourse reinforces the value of BP’s role as an energy provider: sustaining life as we know it and creating infinite possibilities for life in the future. In claiming that BP is providing the very stuff of life to us in groundbreaking new ways – whether in the form of oil or other energy sources Beyond Petroleum – the corporations is able to redirect and co-opt eco-movements in ways that satisfy consumer guilt but do little to disrupt business as usual.

Vogue Italia’s “Water & Oil”

Much as visions of women in professional roles are marketed as proof of “ethical oil” and women’s bodies are represented as objects (not subjects) of petrocultural pleasure, so too are women’s bodies used to market fashion by staging a spectacle of political engagement against oil. The August 2010 issue of *Vogue Italia* contained a photo spread shot by Steven Meisel, featuring the model Kristen McMenamy. The photo spread was a reaction to the BP oil spill that flowed for three months in the Gulf of Mexico in 2010. In this fashion editorial, the female body is recuperated through the guise of political activism to promote consumerism.

In this photo spread, Kristen McMenamy, a white female model, is dehumanized not merely through the compartmentalized focus on one part of her body, but also through her transformation into an animal in other shots. For example, in one photo, the model’s gloved and feathered hand is transformed into an oiled bird. This fashion spread, as a bid to suggest political engagement, builds on longstanding fashion and advertising usages of the segmentation of women’s bodies, women depicted as animals (especially women of color), the stalked or raped woman, the

¹⁷ Peter Hitchcock explains in detail how Lord John Browne, CEO of British Petroleum, during the Beyond Petroleum rebranding campaign “reads corporate responsibility as ‘showing willing’ about fighting climate change,” with little transformation to the corporate practices (110).

murdered female corpse, and the dehumanization of women to sell high fashion. In one image the model explicitly human and alive. However, in this image she eerily resembles a zombie or a recently traumatized civilian victim of war; the headscarf she is wearing resonates with images of women in historical and ongoing wars that are explicitly or implicitly linked to strategic control of oil reserves, natural resources, and associated supply routes. This photo editorial makes no call to action but merely aestheticizes female death and female victims of violence – albeit this time glamorizing big oil as the aggressor. Furthermore, representing women's disempowerment in relationship to oil via a white supermodel in a *Vogue Italia* exposé, a high-fashion magazine targeted at middle- and upper-class women, contextualizes oil and environmentalism as First World issues with First World solutions.

Intermingling deep-rooted icons of misogynistic violence (the female corpse), environmental devastation (the oiled bird), and gothic horror (the nonhuman zombie), the *Vogue Italia* photo spread contributes to a much broader cultural discourse of disaster circulating through Western popular culture that reimagines the oil spill as a monstrous exception. As Alain Badiou has argued, “We live within an Aristotelian arrangement: there is nature, and besides it right, which tries as much as possible to correct, if needs be, the excesses of nature. What is dreaded, what must be foreclosed, is what is neither natural nor amendable by right alone. In short, what is monstrous” (176–77). It has become acceptable to respond to oil spills as moments of exception and to the associated symbols – the bird, for example – with expressions of empathy and outrage. This carefully constructed response ensures that the broader oil assemblage goes unquestioned: like the representation of women as victims of violence and civilian casualties of war, like the disregard for Indigenous treaty rights and traditional ways of life, oil has been entirely naturalized. Despite the fact that the air and water pollution from daily industrial activity around the oil sands in Northern Alberta over the course of a year is equivalent to that from a major oil spill every year, this activity has been naturalized. By contrast, the monstrous oil spill is perceived as something that needs to be brought under control and disciplined.¹⁸ Therefore, it becomes culturally acceptable to protest the impacts of oil only at the moment of crisis. And, of course, the irony is that this protest, just like the *Vogue Italia* fashion spread, is socially condoned and therefore not a resistance against the system but part of its natural cycle of cannibalizing women's bodies in a bid to promote capitalism and the petro-economy.

18 “In 2010, a pair of studies from University of Alberta ecologist David Schindler concluded that [the oil sands] industry [in Northern Alberta] was releasing heavy metals and hydrocarbons at levels that were, in some cases, already toxic to fish and equivalent to a major oil spill every year. Schindler's work was later backed up by a provincially appointed review panel” (Weber).

Conclusion

Understanding the role of gendered petro-relations as they have been historically constructed and as they continue to be perpetuated by *Ethical Oil*, the *Vogue Italia* fashion spread, related eco-fashionista discourses, and mainstream media representations of resistance movements such as Idle No More reveals the degree to which Western neoliberal petrodiscourses are invested in promoting specific female identities and definitions of Western feminism. These iterations justify our current oil-consuming lifestyles as an issue of women's rights through basic rhetorical strategies that reinforce women's relationship to petroleum products in consumer terms and that recuperate the female body as a canvas on which to spectacularize and perform politics. Furthermore, the export of these specific female identities brings with it the promise of new female consumer markets. Therefore, empowered feminist identities outside those sanctioned by the mainstream neoliberal petrodiscourses are depoliticized and renegotiated in the public sphere. Women activists and women activists of color who refuse to conform to the eco-fashionista consumerist identities marketed to them, and whose agendas to protect the environment have the potential to disrupt industrial development and business as usual, pose a particular threat to established forms of hegemonic power and therefore risk becoming the target of violence, ("Women Human Rights Defenders"; Barcia and Penchaszadeh) just as the men that align themselves with these women also risk being framed by discourses of petroviolence and marked as terrorists. It is not merely the threat of alternative energies that is being resisted. Reliance on wind and solar energy will not, in and of themselves, reconfigure power relations, nor eliminate racism, sexism, and class disparity, any more than oil in and of itself causes wealth, poverty, war, or militarism (Huber). Therefore, as we make the necessary moves toward alternative energy sources in the twenty-first century, it is valuable to consider how we might be simply fetishizing these energies, as we have done with oil, in ways that perpetuate the capitalist status quo, and the web of associated relationships and power dynamics of gender, race, ethnicity, and class. Rather than succumb to the fears of what the end of cheap oil might mean for the future in general, or for feminism in particular,¹⁹ it may be more productive to reevaluate current discourses

¹⁹ Sharon Astyk has written and blogged about how "the women's movement has never fully acknowledged the degree to which women's social roles have changed not just due to activism, but due to energy resources. This comparative blind spot means that we have also failed to grasp how vulnerable those gains are." While Astyk rightly indicates that women's lives have been transformed by the petroleum-derived energy sources, the oversimplified cause-and-effect relationship drawn between oil and feminism fetishizes the power of oil and fails to acknowledge

around oil and alternative energy sources for their potential to disrupt rather than to simply reproduce intersectional social inequalities.²⁰

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the many other socioeconomic and political power relations that have played a role in the feminist advances of the last two centuries.

²⁰ For more information on the notion of intersectionality, see "Petrointersectionalities" (Wilson).

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Kathryn Yusoff and Jennifer Gabrys

11 Climate Change and Imagination

The Possible's slow fuse is lit

By the Imagination.

(Emily Dickinson)

Imagination is the key to pre-experiencing
alternative futures.

(György Kepes)

Introduction

This paper explores the complex terrain of the imagination (Kearney) as a way of understanding and exploring the manifestations of climate change in culture and society. Imagination here is understood as a way of seeing, sensing, thinking, and dreaming the formation of knowledge, which creates the conditions for material interventions *in* and political sensibilities *of* the world (Box 1). The genealogy of the “imagination” as a historical and cultural form is vast and inseparable from the ontological formation of the human, constituted in relation to the environment or material world. Thus, how we imagine the world constitutes our genesis of being, as Samuel Beckett’s coda *Imagination Dead Imagine* makes explicit. In the history of thought, Descartes’ binary of an inside and outside of perception constructed an internal imagination in contrast to the material world outside (Warnock). In his study, *The Weather in the Imagination*, Lucian Bola offers a similar positivist view of climate as something “out there” mediated by the imagination. An alternative approach might consider how imagination is actively produced through iterative processes and practices that establish dominant framings of the imagination.

There are two distinct schools of thought here: (1) Imagination as a relational space that is informed by the objects and subjects with which it is entangled. (2) Imagination as a mediator between the positivist world and the human mind. This way of describing the world as divided between an internal perceptual faculty (the imagination) and an external material reality (the world) has been thoroughly contested in a range of different disciplines, such as sociology (S. Fuller), geography (Gregory), art theory (Jay), postcolonial studies, literature (Bakhtin), philosophy (Irwin), feminist theory (Bell), and more recently in the post-humanities and social theory. Kearney suggests that while there is a plurality of terms for the imagination, they all adhere to a basic trait of capturing “the human power to convert ab-

sence into presence, actuality into possibility, what-is into something – other-than-it-is. In short, they all designate our ability to transform the time and space of our environment into a specifically human mode of existence (*Dasein*)” (*Poetics of Imagining* 4). What we can say now of the imagination is that rather than being the site of division it is a site of interplay *between* material and perceptual worlds, where concepts cohere, forces pull and attract, and things, discourses, subjects, and objects are framed, contested, and brought into being.

It is now well understood that anthropogenic climate change is as much a political, social, and cultural event, as it is a scientific one. New scientific knowledge of climate often has to contend with existing knowledge structures and imaginations of environmental processes, as well as challenge dominant framings and trajectories of societal development (such as unlimited growth and technological mastery) (Luke; Stoekl). While a majority of work on the *social life of climate change* has been marked by a distinct concentration on scientific (Intergovernmental Panel on Climate Change), technological and economic approaches to climate (Stern), parallel work in the disciplines of geography (Demeritt), political science (Hulme, *Why We Disagree*), environmental history (Daniels and Endfield), anthropology (Crate and Nuttall), creative practice (Miles) and science studies (Adger, “Social Capital”; “Social and Ecological Resilience”) has begun to pay attention to climate as a dynamic cultural and societal force capable of reshaping societies and environments (Szerszynski and Urry). Further to this reimagining of climate as a social as much as a scientific event, there have been a growing number of voices that have contested the “deculturing” of climate change (Hulme, “Cosmopolitan Climates”) and challenged the role of climate science as a basis for effective decision making under conditions of uncertainty (Dessai et al.). What was once termed “Human Factors” (Proctor) or “Human Dimensions” (Pendergraft) in scientific models of climate change and conceptualized as an arena for the dissemination of scientific knowledge and the programming of behavioral change has been reimagined as a far more potent space in which new knowledge and understandings of climate change are made and enacted that move beyond climate science into new interdisciplinary spaces within and beyond the academy. Climate change, in short, is being reimagined as an ethical, societal, and cultural problem that poses new questions and reconfigures the geographic imaginaries of the world.

These *new cultures of climate change* can be characterized by three distinct temporal and spatial imaginative framings of climate change:

First, there has been a concentration on the *futurity of climate change*, including the arts and techniques of imagination that are bound up with making scenarios, narratives, and contingency plans that project toward or back from uncertain futures. An engagement with the arts of futurity can be seen in the workings of the Intergovernmental Panel on Climate Change (IPCC); the practices of scenario model-

ing; back-casting and forward-looks that characterize much of the science–policy interface of climate science; and the economics of futures markets (Sandor), weather derivatives and climate risk insurance. However, climate futures have probably had their most imaginative expression in the catastrophic renderings of abrupt climate change. Often drawing on the same array of popular environmental concerns that date to the 1960s (resource shortages, population explosions, peak oil, environmental collapse, technoscientific disasters), climate-change catastrophism reproduces familiar concerns with social destabilization caused by finite resources and environments gone awry as a consequence of human hubris. In the imagining of the unimaginable, these extreme scenarios often seek to redefine or challenge the acceptable limits of the discourse of climate change through speculative science fiction or an engagement with what Susan Sontag called the “aesthetics of disaster.” This speculative turn in climate futures is instigated by the uncertainties inherent in climate impacts and predictions. These uncertainties open a generative space of unknowing that has been populated by various “visions” of the future. The arts of this futurity are anticipatory, preemptive, and promiscuous.

Second, there has been (post-Copenhagen) a tacit acceptance of the need for *adaptive strategies* that can be embedded in everyday practices. This entails an imaginative recasting of climate change as something that is not “out there” (located in a global imaginary or in distant places such as the Arctic or Sub-Saharan Africa), but as something that has relevance for all cultures across all scales, and thus is something “in here”, entangled in contemporary practices and future possibilities. This process of *re-public-ing* (Latour and Weibel) and *re-locate-ing* (Slocum, “Polar Bears”) climate change has motivated a number of projects that re-work the representational practices of climate into the intimate and social sphere (Benigno). These practices are in distinct contrast to the causal models of climate-change science that imagine humans as either drivers of climate change or recipients of its effects, rather than as a heterogeneous and differentiated social body with distinct desires, constraints, and imaginations.

Third, this “cultural turn” in climate change has seen a critical engagement with the *practices of climate science*. Multiple creative practitioners and researchers are now seeking to expand modes of climate science production to reconsider the social spaces of climate interaction at the science-policy-public interface, and to promote new forms of the coproduction of knowledge between different communities of practice (such as science-art or art-public collaborations). This latter work, which seeks to redefine the boundaries of climate beyond science, has been led by both academics interested in the social and historical study of science (Szerszynski “Reading and Writing; Miller and Edwards; Golinski; Janković; Miller) and creative practitioners interested in engaging in what this scientific

knowledge *does* in the world, as both creative practice (British Council; Lippard; Yusoff, *BiPolar*) and public engagement (Slocum, “Consumer Citizens”). These responses to the dominance of science-led investigations into climate change have sought to find ways in which to democratize climate science by reorientating the models of practice and politics of expertise, as well as reimagining the experience of environmental data and the possibilities of its use with diverse publics.

Futures: Hopeful and Catastrophic Imaginations

Climate change is a social, environmental, and scientific phenomenon that is characterized by its relationship to futures. Scientists predict levels of carbon concentration and future states of the planet through climate models, while politicians appeal for collective participation in shaping futures through anticipatory logics (Anderson). At the same time, industries attempt to manage and speculate on the risk of future climates, and creative practitioners imagine possible future worlds. “Futures” as an area of study has received increasing attention, particularly in relation to risk management (Adam, *Towards a New Sociology of the Future*; Adam and Groves), disaster management (O’Brien et al.), and scenario building (Nordlund). Yet within this work, there has been scant attention as to how futures could be deployed as a cultural and creative method of environmental imagining and how the arts and humanities could contribute to future narratives. The arts and humanities play an important role in thinking through our *representations of environmental change* and give tangible form to the imagination of different worlds outside of the constraints of the given present. The uncertain futures of climate-change impacts have had profound effect on the public imagination of and engagement with climate change (Pielke).

In this respect, climate science arguably requires even more sophisticated integration with complex cultural and political systems not just to anticipate and mitigate future impacts, but also to reconsider the political and temporal logics that underpin current scenario trajectories and examine the descriptive crafts that produce them as spaces for the imagination. As Barbara Adam comments:

The scientific *production* of the future, in the form of technological innovations, it seems, stands in an inverse relation to the capacity *to know* the scientific creations with all their potential consequences. That is to say, the techno-scientific ability to produce futures is not matched by scientific knowledge of futures thus created. This gap between science-based action and scientific knowledge of impacts raises the specter of structural irresponsibility at the very core of science: for the translation of scientific knowledge into products and for the scientific guidance that underpins inter/national regulation and politics. (*Minding Futures* 5)

Adam suggests that the casual logic that underpins scientific reasoning and its evidential base is unhelpful when there is no past precedent from which the future can be extrapolated with any degree of certainty.

While it is clear that imagining is as ground-breaking a process in the sciences as it is in the arts and humanities, the work of the imagination in science remains buried in practices and intuitive forms of testing that are not properly acknowledged in the descriptive arts of climate future scenarios and the metrics of baselines. While scenarios may be acknowledged as learning or mediating tools to communicate vulnerabilities, perceptions of risk or possible consequences, they often inadvertently become taken as statements *of the future*, thereby acquiring a solidity and authority that is unmerited (because we have no precedent for climate change under current social conditions). Arts and humanities scholars and practitioners in collaboration with scientists can reconsider how climate futures are imagined, who is involved, and how these practices constitute future worlds. This process of imagining and enacting future worlds encompasses the metaphorical, ethical, material, and imaginative registers through which environmental understanding emerges. Furthermore, these predictive methodologies of climate science policy, which differ markedly from materialist forms of knowledge on which empirical science is based, challenge us to recognize the changed conditions of knowledge production in the climate sciences. This is much more akin to the descriptive arts of the humanities, in the production of probable, preferred, or hoped for futures.

Climate futures arguably require approaches that are not only characterized by calculability and risk, but also mobilize imaginative acts that open new spaces and practices for dealing with the effects of living with uncertain futures. There is much work to be done in the “cultural” sphere of how we respond to climate change, and how we might realign the practices and contexts of science production. Rather than define “arts” and “sciences” as separate disciplines in need of intersection (Snow), however, many new creative and scientifically informed practices are emerging that focus especially on new opportunities for political participation and public engagement with climate change (Gabrys and Yusoff). Creative practices may open up new scales of sensation, new forms of representation, both aesthetic and political, and expanded publics for engaging with this critical issue (da Costa and Philip). However, the most radical potential of the arts and humanities is the ability to constitute alternative possibilities to neoliberal approaches to environments (Castree), which actively attempt to disable the imagination of alternatives, outside of economic systems of environmental governance and the valuation of natures that capital can “see” (Robertson). In this sense, arts and humanities do not just or necessarily “mediate” science, but rather the intersection of these fields realigns these disciplines and the terms of their encounter,

providing not just practical adaptation, but also cultural resilience in the production of alternatives (Gabrys and Yusoff).

Representing climate change is an imaginative and creative act that joins the sciences, social sciences and humanities, although the historical forms that constitute these representational troupes differ markedly. Imagining futures is also a political act that configures present actions, behaviors and decision making or *future presents*. In risk theory, determining what counts as significant risk configures the sphere of the actionable, and thus the sphere of mitigation. The sociologist Ulrich Beck suggests that the politics of climate change is productive of a world at risk, so that we now operate at the level of the world object (Beck). While the imagination of the world at risk produces a dispersed and politically diffuse set of relations that makes attribution difficult, Beck argues in his “Cosmopolitan Manifesto” that new communities and forms of solidarity might arise from these shared imaginations of risk. While risk theory (Stern; Beck) and scenario building have led the examination of climate futures, an interdisciplinary approach to developing climate futures provides a more robust understanding of the social and cultural dimensions of futures, and the descriptive and persuasive arts that have been employed in creating those futures as spaces in which new concepts can take hold. The arts and humanities have long been involved in the creation of future environments, whether through science-fiction imaginings of possible catastrophes; designs for new environments; or through speculative proposals for environmental practices. Understanding future representations as a practice that describes environments in the present and their imaginative possibilities to become otherwise is part of how we might understand how possible futures are set in motion.

The classic texts of postwar environmental literature, including Rachel Carson’s *Silent Spring* (1962), Donella Meadows’ *Limits to Growth* (1972), and James Lovelock’s *Gaia Theory* (1965), have all been reissued or revisited in the context of climate change. This thematically situates climate change within a modernist trajectory and its attendant cultures of catastrophe that signal the limits of science, in which science sows the seeds of destruction through the creation of new risks. In the 1950s and 1960s, it was atomic bombs that put the world at risk (powerfully imagined in films such as Barry Hinds’ and Mick Jacksons’ *Threads* (1984), Jimmy Murakami’s *When the Wind Blows* (1986) Nicholas Meyer’s *The Day After* (1983), Peter Watkins’ *War Game* (1965), and in B-movie classics such as Gordon Douglas’ *Them!* (1954); in the 1960s and 1970s, the gigantic irradiated ants of *Them!* came back as oversized amphibians in *Frogs* (1972), a consequence of the chemical revolution and its threatened mass mutations; while exploding populations and resource shortages were also a major concern for science fiction – the most notable being Richard Fleischer’s *Soylent Green* (1973) based on Harry Harrison’s novel,

Make Room, Make Room (1966) – and the attendant ecological destruction of over-expansion, for example in Douglas Trumbull's *Silent Running* (1972). The science fiction that emerged from modernity and its cultures of catastrophism displayed a distinct fascination with disaster at moments in history when it became easier to imagine the end of the world than alternative futures (Yusoff, "Visualizing Antarctica"; "Excess"). While these filmic futures may seem fantastical, we can also view them as the imagination of environmental returns, figured through the specter of wastes and mutations, which motivate a consideration of what is hidden from our current perceptive and temporal frame. The dispersal of form that these environmental returns took – *Them*, *The Thing*, *The Bomb* – Sontag suggests was "the contemporary *negative* imagination about the impersonal" that informed perceptions of environmental risk. In climate change, we can see a similar negative imagination of the impersonal when climate is constructed as exterior to society (as an environmental problem not a social problem), which will return (in both the material and Freudian sense) to haunt postindustrial society.

Lawrence Buell illustrates the various imaginations (pastoral, moral, liberal – and their failure) articulated by American writers and demonstrates how such imaginations created, mediated, and concretized the productive relations between landscape and desire in American culture. He suggests:

Apocalypse is the single most powerful master metaphor that the contemporary environmental imagination has at its disposal. Of no other dimension of contemporary environmentalism, furthermore, can it be so unequivocally said that the role of the imagination is central to the project; for the rhetoric of apocalypticism implies that the fate of the world hinges on the arousal of the imagination to a sense of crisis. (285)

Buell suggests that this framing reveals that the greatest threat is perceived not as the threats themselves, but our perception of them. Research into public perceptions of climate change has revealed confused (Lorenzoni and Pidgeon) and often contradictory understandings of climate change (Ungar), which can hinder the ability to identify effective strategies to address it (Bostrom et al.; Carvalho; Zehr). This perceptual confusion often becomes manifest over time in shifting opinions about the risk of climate change and its veracity, and is highly dependent on the pre-occupations of media coverage (McComas and Shanahan). Buell also suggests that there is a perception that environmental concern will only be activated by a great ecological disaster: a "Great Ecological Spasm," as he calls it. But this, he says is "only a permutation of the first: in both cases, the imagination is being used to anticipate and, if possible, forestall actual apocalypse" (285). What becomes clear is that the imagination not only shapes the perception of the climate change but co-fabricates it in ways that effect the possibilities to act on it. In this sense, imagination is not external to the object of study (climate change), but

actively produces it *as an event* in differentiated ways: rational, apocalyptic, modernist, scientific, utopic (heralding the end of capitalism), and ontological.

Much has been said against the “doom-laden” narratives of climate change as being unhelpful (Hulme, “The Conquering of Climate”), a distraction, or simply as the source of misinformation, and research that has examined the shifting tides of media attention that are given to climate change has borne out this critique. But to frame all such attempts to engage with disastrous or catastrophic renderings of climate change as negative misses the point of the creative role of fiction and the cautionary offerings of the disaster (“Apocalypse” 1; “Disaster” 9). A story at its best, asks us to imagine alongside the protagonist of a story the full range of emotional challenges and difficult choices that have to be made once all the usual landscape markers and reference points have shifted or disappeared. While films like *The Day after Tomorrow* focus on the catastrophic event of climate change and revel in its spectacular destruction (Lowe et al.), Cormac McCarthy’s *The Road* (2006) and J. G. Ballard’s *The Drowned World* (1999) push us toward imagining what it will be like to live on through the disaster, in a post-apocalyptic world of everyday survival. Novels such as *The Road* and Margaret Atwood’s *Year of the Flood* provoke us to think about what it might be like to endure and survive, both emotionally and practically, within changed environments. Distinct climate-change works to emerge in recent years include Ian McEwan’s *Solar* (2010) about a washed-up academic on the international climate-change circuit; Doris Lessing’s *Mara and Dann* (1999) set in a new Ice Age in Africa; and Kim Stanley Robinson’s trilogy, *Forty Signs of Rain* (2004), *Fifty Degrees Below* (2005), and *Sixty Days and Counting* (2007), which deals with ecological and sociological themes of climate change through the lens of the National Science Foundation, while exploring themes of alternative utopianism. Frederic Jameson writes about Stanley Robinson’s Science Fiction (SF): “Utopia as a form is not the representation of radical alternatives: it is simply the imperative to imagine them”. Frederic Jameson sees SF as a crucial intervention in social thought, a cognitive space of critical imagining that offers a “representational mediation on radical difference” (xii). The utopian potential of SF is its ability as a narrative form to imagine an outside to scientific knowledge, while maintaining a dialectic relation to it, thus making us aware of our epistemic limitations (Yusoff, “Climates of Sight.”). As James Kneale and Rob Kitchin argue, SF can be seen more as “a gap: between science and fiction,” an “interest in the fragile fabrication of mimesis” that offers “a privileged site for critical thought” (3–4). What writers like Stanley Robinson make clear is that science fiction takes the most speculative dimensions of science and imagines what these speculations might look like if they were to become manifest in the world. In this sense, speculative science fiction is a cultural meditation on risk.

Imaginations of devastated social and environmental landscapes are often absent from political and scientific understandings of climate change, which take epistemological or rational approaches, often eschewing speculative or polemical descriptions of future scenarios. Yet, fiction can allow us to trace the contours of a changed world and to experience its dislocation across social, cultural, and emotional registers. Many environmental disaster novels are then landscape novels in which the protagonists must cultivate a relation to the destroyed and changed landscape in order to survive, as Ballard describes:

This growing isolation and self-containment, exhibited by the other members of the unit [. . .] reminded Kerans of the slackening metabolism and biological withdrawal of all animal forms about to undergo a major metamorphosis. Sometimes he wondered what zone of transit he himself was entering, sure that his own withdrawal was symptomatic not of a dormant schizophrenia, but of a careful preparation for a radically new environment, with its own internal landscape and logic, where old categories of thought would merely be an encumbrance. (14)

This fictional journey then becomes both a form of emotional and social adaptation for the protagonists and the reader, a means to rethink a radically new environment. Held as we are through emotional bonds formed with the protagonists, the passage through altered landscapes may be crucial to how we culturally adapt to the new landscapes of climate change. Fear and hope about climate change may or may not drive action, but they are a part of how we register and understand environmental change, and in this sense they are instructive to understanding the imaginings not just of futures, but also of modes of adaptation. In this sense, the imagination of climate change landscapes is an entry point for examining environmental relations to identity, place, practices (Heise), and nonhumans (Bloemers et al.), what can be referred to as the environmental imagination.

Imaginations of the far-flung future/past and stories of scientists as time travelers are not only found in fiction, but also often pervade popular science accounts of climate change (Lynas), particularly those that deal with the artifacts of ice cores and the discourses of abrupt climate change (Alley). For example, Gale Christianson starts his account of the 200-year story of global warming, *Greenhouse* (1999) with this epigram from H. G. Wells:

The past is but the beginning of a beginning, and all that is and has been but the twilight of the dawn. (1)

It is likely that Richard Alley had in mind Wells' time traveler when he suggests that ice cores afford the possibility of traveling in time, and thus by extension, the ice core scientist must be imagined as the modern-day time traveler. In another

story of ice cores, *The Ice Chronicles*, the biologist Lynn Margulis imaginatively frames ice cores as both a new historic rule and an heroic witness to time's arrow, a "rocky biopsy of the Earth's skin" (xviii) or "missives from the past" in which "the real hero is a long skinny chunk of icy layered sediment that faithfully record 40,000 human lifetimes of weather change" (xvii). Similarly, Alley suggests, "To read the record of past climate shifts, we have to find the right history book. Humans hadn't yet mastered writing the last time the climate jumped, so we can't look up the answer in the library. Fortunately, there is a sort of 'library' in ice sheets [. . .]" (11).

The iconic and alluring nature of the ice core as a modern-day witness to history of weather has not escaped the attention of artists or iconoclasts. An ice core forms the basis of the Science Museum, London exhibition of *Atmospheres: Exploring Climate Science* (2010), and it is a key iconic object that shifts the temporal horizon of climate pasts and futures in narratives of climate change (Wolff; Yusoff, "Core Histories"; Frazar; Clark, "Life on a Spike").

Iconic objects and images have been crucial to the narrative of climate change in the popular imagination, and icons such as the polar bear have had a marked impact across the affective and sensuous registers of climate-change politics (Yusoff and Gabrys). While polar bears may now seem a somewhat clichéd rendering of climate change, it is useful to explore how icons and iconic places in the narrative of climate change such as polar bears (Yusoff, "Biopolitical Economies"), the Arctic (Lyngé), and sea ice (Bravo), mediate climate change for audiences, functioning as boundary objects (Slocum, "Polar Bears"), examples of contested cross-cultural objects (Broadbent and Lantto), and narratives that circulate in much different ways in Western and indigenous cultures (Henshaw). Establishing effective cross-cultural dialogues around climate change involves taking account of differing and often contested geographical imaginaries of places, people, and things, as well as establishing common matches and meeting places in climate knowledges (Luduc). As such, an attention to the imaginative constructions of climate change suggests a need to pay attention to multiple positions in the dialogs between different cultural perspectives.

In our imaginations of climate futures (and climate pasts), whether in computer models, carbon sinks (Gabrys), or experimental architectures, we are always rendering an ordering of time that denotes a relation between the past, present, and future. For science and fiction alike, the imagination of futures requires a careful critique of the ideologies of time – particularly in relation to present action – that are being produced. The most common of these are:

1. The present as a sum composed of past and future (time imagined as a package).

2. The future as a telos of the past (time as linear, continuous, if not progressive).
3. The future as a sphere of action based on enframings of the past and future in the present (time as a space of action, an emancipatory possibility of the present).
4. The future as the possibility of becoming otherwise (time as dislocation).

Commenting on the future in a way that is deeply instructive for our present relation to time, philosopher Elizabeth Grosz notes, “It is not [. . .] the reconstruction of the past that helps explain our present, but an understanding of our present, and its dislocations, that helps bring about unknowable futures” (108).

In the dislocations of the present, the imagination of the future is a catalyst for thinking about how we might be in the world in other, hitherto unthought ways. Future imaginings can thus be thought of as a process for developing adaptive capacities and emotional resilience within changed environments.

Adaptation: Imagination by Degree

Adaptation often appears to be the less dramatic imaginative counterpart to the catastrophic future scenarios of abrupt climate change. In this respect, adaptation practices may be presented as viable and pragmatic alternatives for configuring attainable climate futures, typically through iterative and local everyday practices. Within this conceptual framing, climate change is not imagined as something that will either teach us a catastrophic lesson or rescue us from our current neoliberal culture by forcing the development of new economies and values. Instead, climate change is located “in here,” within our cultural practices and our everyday lives, rather than “out there” as a remote and global force of alterity. Climate change in this framing is understood as something in which we participate and that is embedded in our lives. This imagining of a more local scale of climate change securely locates it in the realm of personal and social action.

At the same time, however, adaptation presents issues related to the politics of livable futures: who decides the modes of adaptation or toward what conditions is adaptation directed; what and whom does adaptation involve; at what scale are these scenarios envisioned, and how are they carried out? The imagining of adaptation scenarios may at times simply sidestep these issues and present scenes of relative self-sufficiency or autonomy, or alternatively, these scenarios might involve actors of socioeconomic privilege, while neglecting those persons or locations where resource limitations may raise entirely different issues about

what constitutes viable modes of adaptation (Adger, “Social Capital”). Moreover, “preparedness,” as Andrew Lakoff points out, while signaling toward “a way of understanding and intervening in an uncertain, potentially catastrophic future,” has as much to do with addressing political inequalities within present practices as it does with a state of readiness for catastrophic future scenarios.

These complexities of adaptation are often taken up in creative practice projects that present alternative living scenarios for environmentally precarious futures that are at turns oriented toward imagining and critiquing survival practices and technologies. Practitioners and researchers within art, design, architecture, and engineering have focused especially on the city, the community, and the scaled-down unit of the home as key sites of adaptation and intervention that span from the practical to the idealistic and the ironic. While the home is often imagined as a key space in which to manage and regulate individual consumption (Hinchliffe), it also functions as a space of imagined self-sufficiency for weathering eco-catastrophe. Historian of science and design Peder Anker suggests that a number of “ecological architecture” projects from the 1960s onward have often put forward proposals for sustainable living that are based on a relatively questionable parallel to autonomous or “spaceship” technologies. Many of the imaginaries and proposals for adaptation within climate-change imaginaries draw on the 1960s and 1970s living experiments, including Buckminster Fuller’s geodesic domes, Jack and Nancy Todd’s systems for “living machines” that encompass food, energy, and shelter, and Ken Yeang’s green skyscrapers.

These approaches to imagining sustainable architecture in many ways continue to inform contemporary creative practice projects addressing similar concerns. The artist Mary Mattingly has developed multiple projects, including a self-sustaining barge, *Waterpod* (2009, with Ian Daniel), and *Flock House* (2010, with ecoarttech et al.), a living experiment that imagines “how communities deal with disaster followed by a steadily encroaching sea”, that bring forward such strategies for addressing climate change. The *Flock House* (Figure 1) addresses the question of climate-change survival by proposing a structure for continual movement, since “survival is keeping your community on the move”:

The Flock House finds your community living behind a protective tsunami shield, collecting diminishing rainwater, and growing food in hanging gardens with reclaimed wastewater. Conventional wastewater treatment plants are too big, too energy intensive, too chemically dependent and, perhaps most importantly, too stationary. The Flock House natural water treatment system allows your community to quickly establish new systems in each successive move. Treatment ponds and wetlands are left behind and onboard nurseries provide quick replacement. Aquatic plants and microorganisms leverage natural processes to supply your community with consistent, coveted water. (Mattingly)



Figure 1: Flock House, Mary Mattingly et al. 2010. Photo reproduced with kind permission of the photographer.

This structure, which has been implemented as an actual “living prototype,” is imagined to be mobile in all modalities: airborne, seaworthy, and automotive, a “capsule” that may adapt to rising sea levels by remaining mobile. While *Flock House* perhaps embodies many of the adaptive technologies that are characteristic of attempts to deal with resource shortages and infrastructure collapse, at the same time these technologies are packaged in a self-contained mobile architecture that lacks context. Anker suggests that such approaches to self-sufficiency, or developing architectures that are “closed loops,” where the domicile floats free of worldly constraints and concerns, may limit our ability to consider how living consists more of joined-up cultural, political, and even aesthetic matters.

By imagining autonomy to a point of excess, however, it may be possible to engage in the practice of “ironic ecologies,” which Bronislaw Szerszynski suggests may be effective in moving away from a strictly solutions-based approach to environmental change, to consider how a “crisis in political meaning” may be one of the key areas to address when considering environmental adaptation. An approach that encompasses irony allows a greater investigation into our inability to adapt or to address the “gap between ‘is’ and ‘ought’” within environmental practices (“The Post-Ecologist Condition”). The Yes Men’s *Survivaball* (2006), an autonomous living pod originally presented as a spoof Halliburton product, is at once a critique and parody of a highly individuated if technologically advanced attempt to survive catastrophe, particularly since that catastrophe may be seen to be inflicted by the neoliberal corporate culture that peddles such merchandise,

thereby making a profit from the very disasters to which it has contributed. Numerous creative practice projects then take up the issue of individual survival, from Stefan Szczelkun's *Survival Scrapbooks* (Yuill), do-it-yourself (DIY) manuals for self-sufficient living dating to the 1970s and featured during the Foundation for Art and Creative Technology (FACT) Liverpool exhibition *Climate for Change* (2009), to the Museum of Modern Art (MoMA), New York exhibition, *Safe: Design Takes on Risk* (2005), which features a number of projects that propose home survival kits and security devices for life in a state of lockdown. Imaginings of catastrophic futures inform these projects, revealing how different future imaginings motivate different practices of adaptation.

Such adaptation strategies and proposals raise questions about the necessary connections and relations that might actually facilitate "survival." Environmental imaginaries of survival and adaptation may have the tendency to pare down the basic unit of living to the bunker or the self-sufficient barge. At the same time, these projects beg the question of what other systems cannot be eliminated from spaces and practices of "survival." Resilience and preparedness, as discussed above, may not be best realized – or imagined – through depoliticized capsules for survival, but rather through more thorough-going encounters with the social and political connections that make survival and adaptation possible – and ethical (Abélès; de Goede and Randalls). Such encounters inevitably raise questions about the scale at which we imagine adaptation to be viable. Is a living pod reminiscent of the *Biosphere 2* experiment; an ecological community with an "energy descent plan" (Hopkins), as the Transition Town experiments that have now proliferated from the United Kingdom to become a worldwide phenomenon; a sustainable city, bioregion, or nation the most "sustainable" scale at which to imagine adaptation and response to changing climates? Or, are these categories not necessarily mutually exclusive, and do practices of adaptation necessarily need to account for connections made across these scales and situated modes of experimentality?

Cities are larger-scale sites of both utopic and dystopic imagining in relation to climate change – many of the images of climate-change catastrophe feature flooded and ruined urban centers, whether of New York, London, or Shanghai. Cities are then sites for renewed interest in adaptation planning and creative interventions for new forms of urban living. Changes to building practices and infrastructure are areas where many efforts are focused within urban adaptation proposals. Adaptation to climate change is influencing urban planning initiatives worldwide, including new approaches to building on coastal land in Singapore and prototypes for floating homes in the Netherlands (Perkins et al.). The built environment, land use, urban agriculture, and infrastructure are sites for adapta-

tion proposals and projects, not just at the level of planning and engineering, but also through creative practice and climate-change imaginaries.

In the proposal *Thurrock 2015*, commissioned through the Visionary Thurrock planning project developed by the urbanism practice General Public Agency, artist Nils Norman presents “some solutions to the ecological and social impact of global warming on Thurrock, Essex, UK”. These solutions are generated and gathered through a mobile research vehicle powered by hydrogen fuel-cell technology, which he used to conduct fieldwork and engage Thurrock publics in conversations on adaptation to climate change. The project was conducted through a collaborative team of creative practitioners proposing “design solutions” for climate change in Thurrock. As Norman outlines in his *Thurrock 2015* pamphlet, the “emergency problem solving workshops” cover everything from “sea defense” to “gardening actions.” The climate-change adaptation proposals range from the practical to the romantic and idealistic, including “utopia study.” At first glance, these participative adaptation strategies might appear to be a fantastic laundry list of save-the-world proposals. Yet these multiple strategies assembled together instead create a dialogue among these different adaptation practices: utopia study may in fact be as important a site of investigation as sea defense, since our future imaginings of ideal relationships with environments inform what counts as practical – or possible – in the realm of climate change. By activating a space for public dialogue about adaptation, Norman potentially enlarges the scope for considering how adaptation is imagined and who is involved in resourcing and implementing those imagined adaptations.

Urban infrastructure projects are key areas where many of these questions about adaptation are materialized. Climate-change adaptation in many ways is generating a new wave of proposals for reimagining urban processes, from green infrastructure projects that propose new connecting networks of green space to improve the ecological processes of cities (Mostafavi and Doherty), to new ways of imaging water infrastructure not as centralized use and disposal but rather as decentralized systems of reuse and recycling (Bell and Teh; *Emerging Sustainability*), or transport proposals that implement new forms of urban movement or dialogue about circulation in the city (Urban-Think Tank). Urban imaginaries are well-known sites of grand visions that often collide with political complexities and local conditions, and proposals for climate-change-oriented urban infrastructure projects raise similar questions about the methods of participation and implementation. At the same time, projects such as *Thurrock 2015* and *Actions: What You Can Do with the City* (2008–2009), a composite of DIY urban interventions curated through the Canadian Centre for Architecture, suggest there are many ways in which urban publics may become engaged in thinking through and

implementing adaptation not just at a master-planning level, but also at the level of everyday practices and community organizations.

A focus on urban actions at the level of do-it-yourself urban interventions suggests that not just spatial scale, but also the scale of practices, are key ways in which adaptation scenarios are imagined. A number of creative practice projects engage with *community* as the scale at which environmental intervention and adaptation are imagined or proposed. More contemporary imaginings of alternative modes of living propose adaptation through a “graceful” retreat from rising sea levels, as with the Helen and Newton Harrison’s *Greenhouse Britain* (2007) project that addresses how to relocate communities in the United Kingdom away from coastal areas subject to sea-level rise. Transition Towns are, in a much different way, a community of practice that attempts to realize new strategies for living beyond Peak Oil, and without an excessive reliance on fossil fuels and distributed trade networks. The proposals that emerge from new forms of transport to community-based energy generation and alternative currencies recur in many creative practice projects that attempt to intervene in the space of everyday life, and thereby reveal just how interconnected economic exchange or energy generation are with extended cultural networks (Bridge). Interventions into the home may take place at the level of reimagining the home as self-sustaining system, as discussed above, or at the level of recasting everyday consumption or energy practices, including energy-monitoring technologies such as Ben Engebret’s *Personal Kyoto* (2006) or the Interactive Institute’s power-monitoring cord, *STATIC!* (2004). As these multiple projects indicate, adaptation is ultimately more than a technical matter, and public and community participation in developing climate-change adaptation suggests that cultural and political aspects of adaptation are just as critical to the imagining of climate change as technical innovations. Such participation, which is not always straightforward or easily called upon (Barnett), extends not just to imagining collective futures and implementing adaptive responses at multiple scales, but also to developing new forms of public engagement with climate science and climate politics.

Climate Practices

Engaging with climate change in multiple ways (beyond science) then asks questions of sites, networks, knowledges, and practices of constructing, producing, or invoking climate. A common route into climate for art-public collaborations has been to talk about the weather. While climate is the sum of more than day-to-day weather events that take place, many of our on-the-ground experiences of earth

systems and climate filter through a more erratic if intimate engagement with weather. Weather phenomena, from raging storms to atmospheric effects, have formed the focus for many artists' projects. Olafur Eliasson has demonstrated the local effects of weather through his sun, mist, and mirrors installation *The Weather Project* (2003–2004) in the Tate Modern's Turbine Hall. His *The Glacier-house Effect versus the Greenhouse Effect* (2005) uses ostensibly climatic terms to reveal the more local experiment of sun and ice, melting and freezing in turns on architectural scaffolding. While the weather suggests a more intimate point of access to these phenomena (Fleming et al.), in many ways artists working with climatic data have appropriated both the data and the modes of visualization and rendering to recontextualize how these data appear and circulate. Using radar echo to "sound" through the ice, Chris Drury develops visualizations *Under the Ice* (2008) that reveal sound-generated patterns in ice, which literally put our ear to the ice. Artists Thomson and Craighead gather and reposition the stores of local weather data, accumulating this information for locations around the world and presenting digital numbers in a real-time update of green data scrolling across black backgrounds. Their project *Weather Gauge* (2003), oscillates between the local and abstract systems that weather and climate, data and place, continually rearrange. Gathering and rendering weather data take place in artists' projects that range from visualizations and algorithms, including Ramon Guardans, Adolph Mathias, and Mathias Gommel's *Algorithmic Echolocation* (2003), which analyzes 420,000 years of atmospheric chemistry contained in the Vostok Antarctic ice core through image and sound; John Klima's weather-financial visualizations in *Ecosystem* (2001); and Iñigo Manglano-Ovalle's scanned iceberg sculpture *Iceberg (r11i01)* (2005), which uses the measurements of an iceberg in the Labrador Sea to recreate and present this form at full size in the space of the gallery. Other projects in this vein include Gavin Baily and Tom Corby's *Cyclone.soc* (2005), which brings together weather data of severe storms with online debates and develops data visualizations through this meeting.

Weather stories can be used to document (Thornes), as Jari Silosmaki's *My Weather Diary* (2001–2007) (Figure 2), which takes the daily record of photograph and fact to suggest states of weather that are once personal and global, where a view of a frozen lake at Christmas time in Finland intersects with the Tsunami in Southeast Asia, (2004). Similarly, Fred Ivar Utsi Klemetsen's on-going documentation, *The Lives and Culture of the Sami Reindeer People* captures a way of life that is vanishing both due to modernization and to shifting climatic influences. Highlighting the dual influences of climate and oil development in the Arctic, Subhankar Banerjee's photographs, taken over the course of seven years of fieldwork (2000–2007), document caribou migrations and the lives of Inuit people who depend on these animals for their subsistence. It was the presentation of his Arctic



Figure 2: The night between Christmas Day and Boxing Day in Kuivasjärvi *My Weather Diary*, Jari Silosmaki 2001–2007. Photo reproduced with kind permission of the photographer.

images at the Smithsonian, together with their use in the US Senate, which also captured an effective argument against drilling in the Arctic National Wildlife Refuge. Banerjee's images do not begin as a polemic, but rather through documenting Inuit and Arctic landscapes in a changing climate under political and resource pressure, his work circulates in such a way that local stories can begin to carry as much weight as global decisions about the extraction and allocation of resources, and to reconfigure what constitutes a politics of climate change.

These practices of documentation and narration also suggest that stories can be a place of intervention, interruption, and reimagining. Pierre Huyghe indicates ways of rerouting the usual narratives in his project, *A Journey That Wasn't* (2005). Beginning with Edgar Allan Poe's tales of the Antarctic, Huyghe works through the imaginative registers and colonial exploration that have taken place in relation to the Polar Regions. His imagined Antarctic voyage is dramatized within Central Park in New York, further revealing that many of our narratives about environments and remote regions are played out not through actual experience, but through imaginative geographies that reveal as much about the politics of imagining as about what may exist in those regions.

In this respect, Huyghe's fictional journey raises questions about actual journeys now conducted under the banner of climate change, most notably the Cape Farewell expeditions (2001–2008). These journeys, which gather together well-

known artists, writers, filmmakers, and other celebrities, intend to sail to the Arctic in order to allow creative practitioners to make work about climate change. While the celebrityization of climate change is hotly debated, it is important to remember that imaginations have histories. The Cape Farewell journeys have in many ways transported a certain amount of metropolitan baggage and expeditionary hubris to what many participants on this voyage have seen as an “unpeopled” icescape and seascape.

Ian McEwan, one of the participants on Cape Farewell, describes the paradox of the hubris that underscores attempts to “save the world,” which collides with the simple problems of how to sort out the boot room collectively shared by expedition participants. With this insight, however, he misses the complex internal–external politics of the traveling ship in its newfound landscape. In his article “A Boot Room in the Frozen North”, McEwan writes, “The whole world’s population is to the south of us, and up here we are our species’ representatives, making in the wilderness, a temporary society, a social microcosm in the vastness of the Arctic.”

Not only does this emptying of the North reproduce the colonial imaginations of a vast empty space ripe for exploration/exploitation, it prioritizes a Western framing of the environment over the inhabitants of the North and their voices, not to mention overwriting the infrastructures of science that produce these spaces within the context of climate change. Another such art project, David Buckland’s projection of words onto ice (‘Burning Ice’, ‘Sadness Melts’) enacts this very framing of the ice as a blank canvas for Western discourses of climate change. How, we might ask, would these words and forms of projection be changed by an engagement with the inhabitants of the northern ice and seascapes? The metaphorically blank canvas, as Gilles Deleuze suggests, is never blank but is already densely populated with virtual clichés (or historic geographic imaginaries). The work of the artist is not to cover a blank canvas with new images, but to rid it of all the clichés that already occupy it (Deleuze). Another way to think about clichés is as habits of sight and thought, or *a priori* imaginative framings, that prevent the imaginative openings and dislocations that might direct thought and practice in new ways.

These aforementioned artists’ projects rework the scale and site of data and data generation, from the remote to the intimate. The visualization and sonification of climate data may be seen as a way to allow other extra-scientific points of entry and connection within and through this data. Yet in many ways Isabelle Stengers’s description of the way in which processes of inquiry and observation inform our capacity to feel and make worlds is even more relevant. Listening – and sensing – suggests more than passive reception, but rather a commitment to constituting the world through perception. What we might here term the *affective* spaces of climate change are at the same time *effective* in reconstituting the registers and knowledge

networks of climate change through their material-sensible arrangements (Gabrys and Yusoff). If, as Stengers suggests, a critical part of inquiry and observation is the capacity to feel and be aware of worlds in the making, then these multiple forms of authorship are important not just as forms of data input, but also as ways of being in and being engaged with the world. The artist Amy Balkin queries the complicated fact of this global atmospheric citizenship through her project *Public Smog* (2007), which is the result of her simultaneous attempt to register the entire atmosphere as a World Heritage Site worthy of protection and to appropriate the market-led approach to atmospheres, where limited rights to pollute the atmosphere are allocated to and traded among companies (Figure 3). Given the impossibility of any one individual being able to register the atmosphere as a heritage site, since heritage designation must occur through nations, and given the scope of the atmosphere, since a consortium of all the world's nations would have to agree to this designation, Balkin instead reconstitutes the atmosphere into a more democratic space by using the only available tool for treating the atmosphere as a commons by buying back enough emission credits in order not to pollute. Taking her cue from the unitization of the atmosphere for the purposes of emissions trading schemes (ETS), Balkin asks how we might reshape our atmosphere if we were able to buy back the rights to pollute on the open market, and, in doing so, she questions the very citizens and commons that is constituted through the carbon market. Given the ways in which we are collectively reshaping our environments, it is timely to develop projects that imagine how we might also reshape the political tools and practices of citizenship that allow us to engage with climate change.



Figure 3: Public Smog is a Scheme, *Public Smog*, Flash loop documentation still, Amy Balkin, 2006–2011. Photo reproduced with kind permission of the photographer.

Conclusion

The Anthropocene

Alongside these aforementioned attempts to situate climate change and democratize the practices of climate science and decision making discussed in the previous sections, there is a concurrent geographic imaginary that gestures toward the universal and epic, that of the *Anthropocene: The Geological Age of Humans*. The framing of human activity as a geomorphologic force summons up to the imagination what might be termed, after the French philosopher Michel Serres, “the plates of humanity” (16). The destructive nature of these “plates of humanity” to other life forms raises questions about how we imagine and understand the collective human condition, the longevity and sustainability of *Homo sapiens* (Weisman), and the impact of humans on nonhuman and inhuman worlds. In short, the Anthropocene provokes us to imagine ourselves as a population acting collectively, reorganizing the conditions of life in terrestrial, atmospheric, and oceanic spaces; passing out of the territories of man and into the territory of earth as the organizing condition of earth systems. The age of the Anthropocene then invokes an imaginary that is also a cosmology, as it repositions humans as the driving force of change on earth, just at the point where philosophers were predicting the death of humanism and the relic of “the human”. However, there are dangers to both over and under stating the reach of the human into earthly life.

The work of the imagination is a will to become; in many different ways the imagination extends, pushes, challenges, and confides to us what the human is. But, perhaps the greatest work of the imagination is its counterweight to the actuality of the world, to imagine how we might be otherwise. As Nigel Clark comments,

In this way the “human” always embodies something of the other-than-human: traces of storms that have been weathered, stirrings of the earth that have been ridden out, poisons and infections that have been stomached. And the echo of events in the solar system and the wider cosmos. (“Ex-Orbitant Globality”)

Given the challenges that climate change presents to us, which are political, social, cultural, moral, ethical, spiritual (Orr), physical, and emotional, our ability to imagine other possibilities, to embrace decidedly different futures with creativity and resolve, to learn to let go of the sense of permanence we may have felt about certain landscapes that have seemed to be always so, and to embrace change, is paramount to building resilience and adaptive capacity.

Imagination can be thought of as a way of seeing (Yusoff, *BiPolar* 7), or rather a constellation of a way of thinking and sensing that becomes typified or consoli-

dated in images and social actions, what might be thought of as a collective social mapping. Imagination may also be seen as key to the culture and science relation (Prigogine and Stengers), where science is often positioned as a discipline that is lacking in the cultural reflexivity to examine its own imaginaries, particularly those related to the globalities of whole earth computer modeling (Edwards), the framing of human subjects, units of measurements and the continuance of status quo models of the economy. To challenge and critique the practices of climate sciences is an attempt to uncover and understand the collective imaginative geographies that shape understandings of climate change, rather than the calculated imaginary of doubt that is orchestrated by climate skeptics.

We might also understand dominant imaginative framings of knowledge as *paradigms* (Kuhn), but that would be to reduce the imaginative capacity to a causal operative in the methodological search for scientific truths, rather than to see the pioneering work of the imagination as experimental and challenging to understandings of science (Daston). Loraine Daston has argued that the concept of the imagination has played a central role in antiscientific attitudes since the Romantic period, while scientists have frequently been hostile to claims of the imagination. However, while this Newtonian framing of a materialist science does not acknowledge the heterogeneity of the sciences, and most notably the “new” sciences of climate change, it does offer a cautionary tale to forms of knowledge production that attempt to exclude the work of the imagination and thus elide the locus of responsibility that is configured in relation to the future through these imaginative acts. A relational approach to climate change might stress how relations come before things and indeed are part of their construction, and thus any attempt to understand what kind of a thing climate change is would require an investigation in the relational and historic geographies of climate in the imagination; such as those between weather and climate; between modernity and environmental perception; between catastrophe and climate; and between science and risk. This approach would not put imagination inside matter or imagination as a control of matter, but see continuance and shifts, thresholds and various open-ended forms of becoming that are enabled and perceived through an imaginative reckoning with the world of climate.



Box 1: Geographical Imaginations

Geographical imaginations (Gregory) is a term that is used by geographers to describe the role of the imagination in shaping geographic thought, perception, and models of the world. More than a set of images in the mind or an imagination of the world created through images, geographical imagination is a term deployed to seek to understand how unifying or dominant views shared by communities, nations, or distinct groups of people are negotiated, consolidated, and reproduced through images (such as maps, diagrams, icons, and descriptive imagery). In anthropology these imaginaries might be referred to as World Views or Cosmologies and often suggest a symbolic order-

ing of the world as much as a physical description of it, denoting power structures or the arrangement of human-environment interactions. More recent impetus to consider the geographical imagination has come from post-colonialist (Spivak) and feminist scholars, (Butler) who seek to go beyond contesting dominant geographic imaginaries by rethinking the outside, repressed and excluded dimensions of those dominant images and discourses. In his survey of culture and imperialism, Edward Said writes, “just as none of us is outside or beyond geography, none of us is completely free from the struggle over geography. That struggle is complex and interesting because it is not only about soldiers and cannons but also about ideas, about forms, about images and imaginings” (6). In the geographical imagination of climate change we might explore how the imagery of climate change mobilizes and extends familiar geographical imaginations of Africa, (Manzo) Indigenous peoples, (Martello) refugees, globality and models of the world, (Jasanoff) while it challenges other imaginaries about unlimited growth, the role of science, the commons, our responsibilities across temporal and geographic scales, and the ethics of the ‘good life’.

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Neel Ahuja

12 Posthuman New York: Ground Zero of the Anthropocene

Forget “homeland security.” Time itself has changed. We know catastrophes are coming, and we know they’ll take us by surprise. (Hugh Raffles)

The figure of the environment shifts: from the harmony of a natural balance to a churning seed-bed of crisis in the perpetual making. [. . .] It expressed nothing so much as the normality of a generalized crisis environment so encompassing in its endemic threat-form as to connect, across the spectrum, the polar extremes of war and the weather. (Brian Massumi)

The Ground Zero of Extinction

In the decade following the attacks of 11 September 2001, a number of mass media images depicting the destruction of New York City displayed the vulnerability of human life not to the specter of terrorism, but instead to the violence of a planetary environmental catastrophe caused by carbon emissions. One of the zero decade’s highest-grossing Hollywood films, Roland Emmerich’s *The Day After Tomorrow*, envisions a climate-driven disruption of the Gulf Stream bringing a new ice age that engulfs New York – along with most of the temperate global North – in a quick-freezing layer of permafrost. The film portrays the mass migration of the remaining human inhabitants of the United States southward across the Mexican border to warmer climes. In contrast to xenophobic narratives of a settler-colonial United States endangered and engulfed by immigrants and terrorists, the film envisions the New York cityscape as the site of the blowback of the imperial carbon economy. The settler North succumbs to the effects of its own carbon-fueled excesses, transforming US settlers into climate refugees. Emmerich’s film thus reflects how emergent forms of environmental speculation in visual culture create platforms for imagining how planetary environmental processes threaten to upend visions of modernity and humanity based on current geopolitical configurations of fossil fuel capitalism.

This chapter explores the politics of form, place, and animality in twenty-first century speculative images of climate disaster in New York and beyond.¹ While popular speculations of climate disaster reflect a heightened political urgency that attempts to use visions of crisis to generate political affects that disrupt the ecological violence of the carbon economy, the emerging environmental speculations are also remarkable for the subtle ways in which they universalize human responsibility for climate disaster and mask violences of colonialism that created the settler landscapes they depict as vulnerable. Like popular public representations of the 9/11 attacks in US media, visions of the climate-driven destruction of New York appear to instantiate a hierarchy of violence and a politics of place that reveal the settler provinciality of public discourses of security. This chapter attempts to work through such aesthetic and political problems through a crossing between interdisciplinary approaches of species studies, the Anthropocene humanities, and postcolonial critiques of security in order to make sense of some of the emerging affective and visual dynamics of neoliberal climate representation. In the pages that follow, I pose questions about the recent deployment of the term “Anthropocene” to describe human geophysical agency and explore reasons why both artists and humanities scholars appear to be turning to a strong concept of the human as species at the very moment they envision a posthuman future in environmental art, journalism, and critical theory.

Concurrently, this chapter explores animality in visions of posthuman New York in order to understand why the extinction of nonhuman species has not been a central concern of the field of “animal studies.” While there are exceptions to this trend,² it is my sense that the relative lack of discussion of climate change within animal studies may reveal something about the field’s scales of analysis and forms of ethical engagement, which tend to preclude analyzing human-animal relations through economic and ecological networking. Dominant animal theories tend to abstract interspecies embodiments from ecological entanglement and industrial conditions of biocapitalism in order to situate an ethical recognition of some nonhuman species (often vertebrate mammals); as such, the mass violence of climate- and development-driven species extinction has largely remained out of the purview of emerging animal studies. In contrast, this chapter will attempt to articulate a materialist and decolonial critique of emerging forms

1 “Animality” becomes a useful keyword, as opposed to “animal” or “species,” since it signifies both a figural racial form of dehumanization and a possibility of shared interspecies intimacies. See further Lundblad 12, 15–16; Jackson 677–678.

2 I note in particular the work of ecofeminists including Donna Haraway, Val Plumwood, and Deborah Bird Rose, each of whom has explored postcolonial and indigenous critical discourses as well as problems of extinction and conservation.

of climate speculation, attending along the way to the aesthetic and political significance of animality and place. In sum, I argue that speculations of climate-driven extinction in contemporary literature and visual culture operate as postcolonial fantasies of a universal human precarity, fantasies that are coming under increasing duress as transborder risk migration, indigenous and Southern environmental activisms, and persistent forms of ecological resilience challenge totalizing environmental visions of the human.

Worlds Without Us

Climate speculation – particularly among artists and intellectuals in the overconsuming postindustrial states of the North – imagines the future extinction of humans marked by the hollowing out of the cityscape and the resurgence of other species, flora and fauna exhibiting resilient capacities and a transcendence of the terran landscape through airborne, underground, and underwater mobilities. Ice, heat, water, toxins, and invasive species – as slow-moving geophysical and biological risks – have in turn replaced airplanes, bombs, and collapsing buildings – images of geopolitical emergency – as the pre-eminent threat to humanity in twenty-first century depictions of New York. I am interested in the curious form and content of such projections, as well as in their uncanny representation of interspecies intimacies.

Invoking the complete destruction of human settlement in New York, painter Alexis Rockman's mural *Manifest Destiny* depicts an urban disasterscape 3,000 years into the future. Displayed in the Brooklyn Museum in 2004, the mural portrays a New York swamped by a global warming induced sea level rise. Playfully titling his painting after the myth of the divinely ordained Westward movement of settler colonization, Rockman draws inspiration from the landscape tradition of the nineteenth-century Hudson River School, which romanticized the American wilderness as a pastoral setting ripe for settler appropriation. One element of this tradition's wonder at the landscape, however, configures the power of destruction and processes of decay as emergent to both nature and empire. Rockman revises Hudson River artists' visions of uncanny, destructive landscapes. In Thomas Cole's *The Course of Empire* (1833–1836), human settlement ultimately disrupts the pastoral peace of nature in the vision of the rise and fall of the Roman imperium. Alternatively, Albert Bierstadt's *Storm in the Rocky Mountains* (1866) envisions nature itself as the source of destructive power as the dark clouds of a forming storm threaten to disrupt the idyllic mountain landscape. Rockman applies such visions of development and climate as ecological forces to a brightly

hued Brooklyn waterfront that is submerged and decaying, overtaken by the sea, tropical ocean vegetation, and circling birds above.

In contrast to the Hudson River artists, who often produced landscapes unsettled by human and animal species and thus ripe for the Westward march of colonialism, Rockman gives nonhuman animals a central role in the imagined ecological formation of posthuman New York. Animality plays a central role in Rockman's *Manifest Destiny*, which depicts pelicans, jellyfish, and cetaceans who appear in their future-evolved guises to return to prehistoric, prehuman biological form. A common technique in Rockman's oeuvre, the out-of-time appearance of prehistoric animals indicates both the possibility that biotechnologies may repopulate extinct bodies and the potential that posthuman evolutionary processes will (re)generate curious bodily capacities to serve the needs of adaptation to an environment of extinction. Birds and ocean creatures in Rockman's work thus appear as particularly capacious feeders in a world where species must be able to traverse land, sea, and air borders in order to survive.

As such, Rockman repeatedly makes stark visual dividing lines between different ecologies and temporalities of disaster central to his aesthetic processes. Imagining a future without humans, Rockman's use of ecological dividing lines suggests that extinction presses the painterly gaze to multiply perspective and shift dimensions or effect-times in order to speculate on changing forms of species and landscapes. In *Manifest Destiny*, this horizon line is formed by the border separating the water from the air across the center of the image. Above, birds of prey circle the carbon haze-filled sky; below, sea creatures populate the submerged landscape of the Brooklyn waterfront, feeding in hollowed-out structures of the built landscape as they are surveilled by the birds above. In an earlier work, *Central Park* (1997–1998), Rockman depicts the iconic city park space divided vertically through the center by a line dividing two dimensions of the climatic future. In one, permafrost envelops the city, while in another, tropical vegetation and birds overtake urban skyscrapers emptied of human occupants.³ Formally, Rockman's visual technique of ecological dividing lines is a departure from the detached, romantic visions of sublime landscape; ecologies generate a variety of possibilities for the form of bodies, which allows a speculative multiplication of possible lifeworlds. Nonetheless, Rockman's wondrous gaze into the future of life and planet echoes the work of Cole, whose vision of ruins premised on the decline of Rome in *The Course of Empire* displays a profound colonial nostalgia linked with the romantic, pastoral view of landscape.

3 Rockman's *American Icons* series imagines such decay amidst a regenerating posthuman lifeworld in the depiction of many US landmarks, including Disneyworld and the Hollywood sign.

Rockman's vision of human depopulation and the nonhuman reclamation of ecological space echoes similar speculative experiments in narrating the *longue durée* of environmental agency in the landscape. In the realm of nonfiction writing, Alan Weisman's speculative journalism imagines what it would mean for the New York cityscape if climate change brought about the extinction of humans. In his acclaimed book *The World Without Us*, Weisman imagines a posthuman cityscape in the shadow of 9/11:

The breathtaking, swift collapse of the World Trade Center towers suggested more to us about their attackers than about mortal vulnerabilities that could doom our entire infrastructure. [. . .] The time it would take nature to rid itself of what urbanity has wrought may be less than we might expect. (21)

Weisman sweeps through select geophysical histories of the city's settler-colonial rise and its imagined postcolonial fall. Beginning with the nineteenth-century razing of the hillscape for which the indigenous Lenape named the island Manna-hatta, Weisman recalls the infilling of land that expanded the island, artificially producing the nationalized "ground zero" of present-day Lower Manhattan. He then turns to the future, speculating on a number of transformations that would occur in the absence of human management, life-processes, and domination of other species: the drowning of the New York subway, corroding buildings, the separation of the George Washington Bridge, the obliteration of cockroaches in the absence of artificial heating, the mass predation of garbage-starved rats, the overtaking of roadways by invasive *Ailanthus* trees. Like Rockman's *Manifest Destiny*, then, Weisman's vision of the environmental extinction of humanity occasions a deep-temporal echo between the destruction of indigenous lifeways during the colonization of North America and the new-imperial destruction of the land with the carbon-driven post-1945 "great acceleration" of neoliberal capital. Eventually for Weisman, as the atmosphere stabilizes following human extinction, New York suffers either an engulfment of coastal areas by rising seas or a return of the glaciers that covered Mannahatta at the end of the Pleistocene ice age.

Like Rockman's revision of the settler landscape tradition, Weisman's journalism registers both a deep-seated fear of the vulnerability of carbon-fueled American empire and a contrasting postcolonial fantasy of justice: the dream of the end of man's empire over nature, and a liberation of thought and politics to love what Weisman, along with Eugene Thacker calls the world-without-us (3). In contrast to European post-Marxists such as Slavoj Žižek and Jean Baudrillard, who announced "the death of the real" when nineteen al-Qaeda hijackers attacked symbols of US hegemony and transnational capital on 9/11, I argue that recent environmental speculation infuses the spectacle of destruction with the

force of accumulated environmental agency, attenuating the apparent unreality of apocalypse with visions of the deep history of the Earth; the metamorphosis of bodies; and the cryptic ecological agency of the human.

(Anthropo)scene of the Crime

While the movement toward a speculative posthumanism appears at first glance to be a site of possibility for responding to climate change and a method of centering the vulnerability of animal life in the transborder routes of climate disaster, it also suggests a deep division in the international and class politics of species representation in the era of the so-called Anthropocene. The term “Anthropocene” proposes the establishment of a new geological era of Earth history (separate from the Holocene of the past 10,000 years) in which a phantasmic figure called “human” is the primary agent influencing the geophysical formation of the planet. Even as artists and activists begin to envision a far-off spectacular destruction of metropolitan empire, such seductive projections risk overshadowing the many colonial, social, political, economic, and ecological violences that have formed the present time of extinction (Ahuja). Furthermore, they replicate the erasure of indigenous presences from the landscape in order to abstract the collapse of settler ways of life as the broader undoing of “the human” and of life itself. This temporal shuffle of past and present in the name of the future thus makes it difficult to see the destruction of everyday life that is ongoing – in the present rather than the future tense – for the world’s poor, displaced, and indigenous populations, who in the first decade of the twenty-first century have been actively turned into “sinks” for the environmental and economic destruction of rising sea levels, increasing weather events, extinctions, resource inequity, and toxic pollution. From hurricane victims to dam, oil, and forest refugees to populations subjected to life-threatening diseases and toxic waste, the planetary present is a time of mass genocide and extinction even as emerging neoliberal forms of climate speculation (particularly among artists in the global North) attempt to grasp the risks that today’s normal poses to the very future of life and planet.

The twenty-first century visions of ecocidal destruction that are permeating environmental art and literature are not limited to representations of New York and other hubs of global capital; in fact, they constitute an increasingly transnational sphere of speculation driven by mass-mediated images of disasters, accelerating impacts of anthropogenic waste, and growing transnational senses of insecurity in the reproduction of life itself. Emergent forms of environmental speculation increasingly dispense with romantic, pastoral landscapes of late

twentieth-century mainstream environmentalism in favor of deathly spectacle, gothic mutation, and the sublime terrors of the complexity of life – marking the circuitous paths and uncanny forms of habitation emerging within today's environmental transformations. As artists and writers respond to climate change, species extinction, and sudden and spectacular calamities like Hurricane Katrina, the Indian Ocean tsunami, and the Fukushima Daiichi disaster, visions of apocalyptic destruction increasingly situate crisis within the deep time, interlinked space, and dimensional phase shifts of planetary intimacy and friction. Such representations converge with an emerging critical discourse in the Anthropocene humanities, which idealistically invokes the radical potential of recognizing human ontological embeddedness in life and planet for undoing anthropocentric forms of thought and settlement (Morton).

Yet to invoke the human and its relation to nonhuman species in this particular speculative form – a form in which humanity is totalized by aggregating anthropogenic wastes and projecting them into a future spectacle of environmental harm – is a strategy that comes into collision with the politics of indigenous environmental activism, which have guided the international political discourse on climate at least since the 1992 Earth Summit in Rio (Escobar). For this reason, Jason Moore offers “capitalocene” as an alternative to the Anthropocene concept, arguing that “nature” cannot be abstracted from the histories that entangle forms of capitalist development with the social worlds crossing species that constitute what Moore calls “the web of life”. Emerging in tension with visions of apocalyptic posthumanism that fold differently situated social and national groups into a vision of the human domination of nature, writings concerning weather disasters in the global South insistently problematize the figure of “human” as totalized environmental agent. The 2010 Haiti earthquake, for example, is increasingly cited as both evidence of the international divisions of life and a site for speculating about the conjunction of economic and ecological precarities under neoliberalism. For geographer Arun Saldanha,

The ecology of global capitalism has for some four centuries been intrinsically *racist*, making white populations live longer and better at the expense of the toil and suffering of others [. . .] the truly rational humanist response to such disasters is to prevent them, to change the economic structure making brown and black populations die in disproportionately large numbers where extreme weather, drought or earthquakes strike. As activists point out, places suffering most from climate change have contributed least to carbon emissions. The Anthropocene is in itself a racist biopolitical reality.

There is much to unpack in this statement, which suggests that the capitalist system, rather than the life practices of humans in general, constitutes the central conduit of ecological violence. To understand how capitalist accumulation and

the “great acceleration” of carbon-fueled development generate specific racial effects might further require exploring the particular imperial nexus linking Euro-American arms and finance capital; West Asian oil; and East Asian manufacturing that ensures that the Gulf States and Japan have joined the overconsuming forces of carbon extraction through which a small minority of national populations consume outsize proportions of the total energy and materials colonized by contemporary capitalism.

Nonetheless, Saldanha’s apt diagnosis of climate change as a racialized biopolitical crisis resonates with Junot Díaz’s framing of the question in terms of capital and prior histories of colonial extermination and slavery. In his essay “Apocalypse,” written in conjunction with the apocalyptic short story “Monstro,” Díaz writes:

This is what Haiti is both victim and symbol of – this new, rapacious stage of capitalism. A cannibal stage where, in order to power the explosion of the super-rich and the ultra-rich, middle classes are being forced to fail, working classes are being re-proletarianized, and the poorest are being pushed beyond the grim limits of subsistence [. . .] perfect targets for any “natural disaster” that just happens to wander by. It is, I suspect, not an accident of history that the island that gave us the plantation “big bang” that put our world on the road to this moment in the capitalist project would also be the first to warn us of the zombie stage of capitalism, where entire nations are being rendered through economic alchemy into the not-quite-alive.

Díaz’s essay offers a different kind of temporal shift that contrasts with Rockman’s and Weisman’s work of climate speculation. By shifting between the plantation formation of settler colonialism in the Americas to the present configurations of zombie neoliberalism, Díaz charts a settler ecological temporality that intervenes in the seamless production of the human as universal environmental agent. The geophysical trope he uses to describe the rise of the colonial plantation economy – the “big bang” – echoes the seismic disruption of the Haiti earthquake, obliterating prior social relations and ways of life as it instantiates new and destructive relationalities. Troping colonialism and slavery not as events but instead as the very instantiation of temporality, Díaz invests the political, economic, and ecological processes of colonial capitalism with geophysical force. This could be viewed as a reversal of the settler vision of the posthuman future – rather than abstracting the human as ecological agent, Díaz imparts to colonialism a vision of its biosocial force and its potential for fracturing the category of the human. This confirms the assessment of Mary Louise Pratt, following James Ferguson, that the transformation by neoliberal capitalism of large populations into human surplus of the capitalist order is generating crises of futurity and visions of millenarian apocalypse; such crises seem to invoke a universal human but actually reflect a submerged scene of inequality and violence (210–211).

While the coming environmental crises are likely to first affect those humans and nonhumans already in the most precarious social and eco-logical positions (Intergovernmental Panel on Climate Change), visions of the destruction of New York most often privilege dominant settler-colonial understandings of landscapes and systems, in the process advertising apocalyptic fears of the fall of settler societies and the waste-producing capitalist relations upon which they stake life. This is one reason that New York – the seat of world financial capital since World War I, occupying Lenape land – remains such a potent site for the imagination of ecological apocalypse. In a rhetorical move that Jodi Byrd terms “the transit of empire,” the figure of an always already vanishing native is transmuted into a figure of precarity that can be deployed to justify the securitization of settler empire. Alongside the spectacles of emergent destruction exists an everyday state of denial and politics as usual, evidenced by national elites’ post-Kyoto global impasse over action to rein in the excesses of the carbon economy. While environmental speculation opens up many different ways of thinking about and living with the ongoing planetary changes that humans and other species are collectively experiencing, I pay particular attention to how visions of disaster reveal a set of governing logics and an economy of hope invested in maintaining the current geophysical and biological parameters for life as we know it. Put differently, while it is necessary to oppose the massive forms of destruction created by the world carbon economy and various forms of industrial pollution associated with it, the publicization of environmental risk by environmentalists can easily collude with governing logics that exacerbate the postcolonial political divisions of North and South and rich and poor as they accommodate environmental violence and emerging politics of species into speculative risk media. This is why it is as necessary to pay attention to the politics of species representation as it is to simply find more creative ways to publicize the environmental destruction and the science that helps us explain it. There is an urgent need in the early twenty-first century for a robust critique of the investment in carbon economies by the world system of nation-states, one that furthermore accounts for the mass forms of ecocidal violence and the unequal subsidization of Northern life by the extractive carbon economy.

The Human of Precarious Futures

In the speculative vision of human extinction, we may lose the complexity of animality and place in environmental representation. Neoliberal visions of universal human extinction in the North coalesce in a figure I have begun to call *the human*

of precarious futures. This speculative vision of a dying humanity finds itself most at home in a reversal of the colonizing meme of traditional science fiction (Hopkinson 7–9; Bahng). Whereas science fiction traditionally recycles the settler-myths of manifest destiny as fictions of benevolent exploration, the emergent figure I am describing envisions the receding human as swamped by an insurgent and impure nature, literalizing invasive nonhuman species, the toxic excrement of human society, and the emboldened force of nonhuman species and the planet as the rising “wretched of the earth.”⁴ Paradoxically, this speculation of a reverse colonization recenters settler bodies in the blowback of a contaminated nature, rendering environmental vision characteristically anthropocentric and ethnocentric even as it troubles visions of the human as planetary sovereign.

Despite the work that Marxist, feminist, queer, critical-race, and post-colonial theories have done to unravel liberal mythologies of human universality and progress, the turn to an Anthropocene humanities appears to be instituting a new universalist vision of human species-being. In his already classic essay “The Climate of History: Four Theses,” Dipesh Chakrabarty argues that scientific thinking about climate change both “appeal[s] to our sense of human universals while challenging at the same time our capacity for historical understanding” (201). In particular, Chakrabarty claims that chemist Paul Crutzen’s attempt to periodize Earth time since the rise of industrial capital as “the Anthropocene” – namely, the period in which human environmental agency became the guiding force in the geophysical formation of earth – shatters a long-standing Enlightenment distinction between human and natural history. Chakrabarty reads the Marxist globalization literature alongside the climate change literature and attempts to reconcile the widely divergent takes on the human that frame these two accounts of destructive capitalist industrialism. Chakrabarty’s conclusion is that, in contradistinction to the impulses of some Marxist and postcolonial critiques of globalization, it is necessary to engage with the forms of species-thinking that a geophysical history of the human illuminates. There is an environmental agency that enables the existence of humanity, acting as a prior condition to capitalism and colonialism because it is a prior condition of humanity itself:

Why think in terms of species [. . .]? Why could not the narrative of capitalism – and hence its critique – be sufficient as a framework for interrogating the history of climate change

⁴ This planetary riff on Frantz Fanon’s famous appraisal of decolonial insurgency and nationalism is suggested by Leela Gandhi’s invocation of Fanon in her work on cosmopolitan radicalism of the *fin-de-siècle*. In Gandhi’s account of Indian and British political activity, the protection of nonhuman animal species became one invocation of “the wretched” alongside the homosexual and the colonized.

and understanding its consequences? [. . .] We have slid into a state of things that forces on us a recognition of some of the parametric (that is, boundary) conditions for the existence of institutions central to our idea of modernity and the meanings we derive from them. [. . .] [The agricultural revolution] was made possible by certain changes in the amount of carbon dioxide in the atmosphere, a certain stability of the climate, and a degree of warming of the planet that followed the end of the Ice Age (the Pleistocene era) – things over which human beings had no control. In other words, whatever our socioeconomic and technological choices, whatever the rights we wish to celebrate as our freedom, we cannot afford to destabilize conditions (such as the temperature zone in which the planet exists) that work like boundary parameters of human existence. These parameters are independent of capitalism or socialism. They have been stable for much longer than the histories of these institutions and have allowed human beings to become the dominant species on earth. Unfortunately, we have now ourselves become a geological agent disturbing these parametric conditions needed for our own existence. (217–218)

What does it mean that Chakrabarty posits “parametric conditions” for human existence? He specifies that the climatic conditions that allowed large-scale agriculture are the common condition for the existence of humans. However, the general difficulty with which peasant agriculturalists attempt to survive persistent weather fluctuations and price instability in the present places pressure on Chakrabarty’s argument, demonstrating that physical vulnerability is not equally shared and is as dependent on economic factors as it is on climate. What does it mean to posit that “human beings are the dominant species on earth” after Chakrabarty’s own earlier writing in *Provincializing Europe* documented the failed attempts of the discipline of history to integrate all bodies speciated as human into a unity? While the idea of human domination is often taken for granted in animal studies and environmental humanities, it is in tension with feminist science studies works that attempt to break down the independence of the human body, to think about how microbiomes, food, and commodities persistently reproduce anthropomorphized bodies through interspecies relation. Saldanha furthermore argues passionately that carbon privilege has been geographically and racially concentrated. Yet perhaps like the image of the destruction of the New York cityscape – itself recycled countless times before and after 9/11 in US popular culture – there is something seductive about thinking the human as a universal. Perhaps the rise of the Anthropocene humanities reveals not just a recognition of ecological crisis, but also a failure to adequately grapple with neoliberal forms of crisis thinking and a sense of exhaustion among humanists who are tired of having to attend seriously to questions of difference “internal” to the anthropomorphized human.

Insurgent Life, Posthuman Blowback

Weisman's vision of plant and animal forms slowly overtaking the post-human New York cityscape has aesthetic resonances with some recent depictions of Southern ecological disasters, wherein life forms regenerate in spaces of contamination. One difference in such representations – such as Díaz's short story "Monstro" depicting a climate-driven zombie apocalypse in Haiti – is that depictions of regeneration in the South often include the regeneration of human form in the space of apocalypse. By foregrounding debility as a condition of living through ecological crisis, such speculations situate the environmental force of capitalism as entangled with many animal species including unequal groups of humans.

One case in point involves the aesthetic strategies used by activists and artists to represent the precarious ecologies of Bhopal, India following that city's experience of a toxic gas leak by the US based Union Carbide Corporation. On 2 December 1984, that company's chemical plant in Bhopal became the site of the world's most toxic and deadly industrial disaster. Indian managers supervised directly by the US office had cut corners on standard safety measures in the days leading up to the accident. After machinery used to produce agricultural pesticides for India's green revolution failed to properly ventilate, an explosion occurred in the middle of the night that sent a toxic plume of methyl isocyanate gas over the surrounding shantytowns of Bhopal. Gas exposure directly affected over half a million humans and seeped into the air, water, and sediment, killing plant and animal species at varied scales and speeds. One piece of a broader neoliberal strategy of the Indian National Congress, carried out in cooperation with big US chemical and agricultural corporations and championed by the development community, Union Carbide's chemical inputs into Indian agriculture powerfully demonstrated their environmental costs. Some 4,000 humans died immediately, with another 8,000 dying from exposure in the next two weeks. As gas and other contaminated matter leached into the environment, hundreds of thousands more would ingest poison, developing cancers, respiratory and gastrointestinal diseases, and other ailments more slowly. In the process, the Bhopal disaster would split the temporality of ecocide: the spectacle of the explosion and instantaneous death (affecting thousands of humans) rocked a city overnight while the deeper effects of the chemical devastation (affecting hundreds of thousands of humans and unknown animal populations) permeated through bodies at slower rates through more mysterious routes. In addition to the spectacle of an environment out of control, there was a more insidious violence, a *slow violence* that Rob Nixon describes as central to understanding the emerging environmental poetics and politics of the poor.

Bhopal has occasioned both an active environmental justice movement and a wide array of environmental representations that grasp both the violence of environmental destruction and the curious and circuitous routes of ecological entanglement and intimacy. Navigating a toxic environment like that of Bhopal reveals the ways in which the animal bodies we call “humans” encounter unexpected forms of life when anthropogenic waste transforms environments. In contrast to the works of Rockman and Weisman, Indra Sinha’s loosely fictionalized novel of life after the Bhopal disaster, *Animal’s People*, focuses intensely on national, bodily, and economic differences that circulate around the site of environmental disaster and ecocidal mass death. The narrative follows the disabled and animalized protagonist named Animal, walking on all fours, through a local campaign against the American multinational responsible for the destruction. Telling his story to a foreign journalist, Animal moves in and out of dreams, fantasies, and forms of social repression that follow him through the economically and environmentally depressed town.

Early on in the narrative, Animal explores the ruins of the pesticide plant. He notes that despite leached chemicals’ continued extermination of insects and other small animals, sandalwood, caraway, dogs, and birds are overtaking the hollowed-out structures of the buildings, the pipes and foundations cracked by creeping tree roots (29–31). With some bodies exterminated, others living in differentiated conditions of disability and slow death, and still others capitalizing on the spaces deserted by the dead, mass death extinguishes some particular *lives* without ending *Life* as a broader ecological process; Life remains resilient, insurgent against apocalyptic landscape. The narration of the resurgence of life at the site of the abandoned factory entangles Animal – whose name reflects how environmentally produced disability threatens capitalist processes of anthropomorphism – with those very species repopulating the site of disaster. On all fours, Animal creeps among the emerging species outside the stigmatizing gaze of the “human” occupants of the city who seek justice on behalf of the community but who are unable to grasp the affective life of disaster that Animal experiences as a disabled subject transiting the urban crisis ecology. In the reshuffling of species and bodies, environmental disasters disperse crisis time into everyday time, reordering the form of Life. Even in the most toxic of environments, there are bodies poised to fill in destruction. Any assumption that humans exist outside of ecological relations, and outside of the forms of regeneration that produce new futures out of carbon violences, bumps up against the reality of creatures that absorb the interspecies force of disaster.

The vision of insurgent nonhuman life like Weisman’s or Rockman’s posthuman New York may easily miss what exists elsewhere throughout Sinha’s text: the existence of populations rendered debilitated surplus, who navigate and per-

sist despite a necropolitical order that seeks their extinguishment. Sinha makes clear that it is possible to spatially and economically locate responsibility and redress for such slow violence, as activists in the novel attempt to bring to account the US company responsible for the destruction. (Until his recent death, Union Carbide C.E.O. Warren Anderson continued to live in Long Island and Connecticut, not far from the setting of Rockman's *Manifest Destiny*, avoiding extradition to India.) Between visions, then, of the spectacular fall of Manhattan as global city, and the dispersed forms of death and debility erupting in the Bhopal slums, the emerging literature and visual culture of ecocide opens precarious life into uncertain futures. Such representations capture the diversity of temporalities and spatializations of ecological violence as they signal a new set of terms for a neoliberal politics of animal life. If the end of the Pleistocene era (the long, glacial period of Earth's geological history ending approximately 11,000 years ago) marked the beginning of a planet that could support a human diaspora and colonization of the majority of its landmass, the vision of coming ecocides signals an Earth that will be subject to mass adaptation rather than the wholesale extinction of Man. The emerging figures of human precarity are thus haunted by the deep inequalities that render the planetary form of life in constant states of flux and mutation.

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13 Climate on Screen: From Doom and Disaster to Ecotopian Visions

While literary texts rely on words to help readers imagine climate change, film relies on a somewhat – if not entirely – different narrative toolset. Most obviously, it uses images, motion, and sound, pre-packaging our perception to some degree, if not our affective response. In the case of climate change cinema, such pre-packaging has tended toward the dark and disastrous, as filmmakers are torn between the desire to forewarn and the need to entertain and make money. It has thus become a critical commonplace that cinematic depictions of climate change offer a spectacle-driven, apocalyptic vision that is at odds with the diffuse experience of climate and the slow violence of climate change (Nixon). Some critics fear that such dark and disastrous visions might prove detrimental to our capacity to address the issue properly because people end up disengaging from it entirely.¹ Watching disastrous but entertaining depictions of climate-changed future worlds, the logic goes, will either lead us to not take the issue seriously enough or to be so overwhelmed by negative emotions that we fall into apathy and become incapable of doing anything at all.

There are at least two problems with this assessment. The first problem results from what is often a relatively narrow focus on blockbuster fiction films such as Roland Emmerich's *The Day After Tomorrow* (2004), Bong Joon-ho's *Snowpiercer* (2013), and George Miller's *Mad Max: Fury Road* (2015), and a handful of documentaries that offer less spectacular but similarly apocalyptic views of the future in support of their dire calls for action (Schneider-Mayerson, "Climate Change Fiction" 309). Typical examples include Davis Guggenheim's *An Inconvenient Truth* (2006), Franny Armstrong's *The Age of Stupid* (2009), Jeff Orlowski's *Chasing Ice* (2012), and Fisher Stevens's *Before the Flood* (2017). Often overlooked are films that are more concretely utopian in outlook and that deal in more nuanced and/or less pessimistic ways with the ecological, economic, and social repercussions of climate change, some of which I will discuss in this chapter.

Secondly, and just as importantly, we need to develop a better understanding of how exactly films – including climate change films – engage viewer emotions and what effects such engagements might have. A related aim of this chapter is therefore to explore the ethical and affective dimensions of depictions of climate change in fiction and documentary film. It will consider the empathetic relation-

¹ See, for example, Willoquet-Maricondi.

ships and calls to action that cinema might be capable of effecting in ways that partially draw from but perhaps also elude literary strategies. And it will argue that both negative and positive emotions are important for how climate change films engage viewers. The first part of the chapter will dig deeper into the concerns that critics and scholars have voiced about the cueing of negative emotions through the depiction of (future) climate doom and disaster. The second part will then turn to films that have tried an entirely different affective approach by presenting possible solutions to the climate crisis along with desirable ecotopian futures in a mode that is often humorous, witty, and uplifting. Both narrative strategies, I will suggest, have their place in climate change cinema, and both can be effective with some audiences.

A Cinematic History of Climate Doom and Disaster

Many cli-fi authors, notes Matthew Schneider-Mayerson, write “with an activist bent, hoping to alert their audiences to the gravity of the threat and the need to take immediate action” (“Climate Change Fiction” 309). By contrast, there are very few cli-fi films that one might call activist by any stretch of the imagination. In his overview of “Cli-Fi on the Screen(s),” Michael Svoboda lists more than sixty films that, in some capacity, include an element of climate change, but the list includes only a few films that are concerned with the scientific side of the issue, let alone show any interest in communicating causes or possible solutions. As Svoboda notes, filmmakers have instead “focused on extreme weather events and the possibility of Earth slipping into a new ice age,” choices that “reflect filmmakers’ predispositions more than any scientific consensus” (43). At the same time, the very nature of those global phenomena causes problems for cinematic representation. As Richard Lawson has pointed out, it can be “hard to locate a singular hero in such a global narrative; what grizzled hunk or butt-kicking babe is going to singlehandedly stop the rise of the oceans, reorder our weather, and repair the sky?” Even though at their root they are anthropogenic, the massive environmental changes brought about by a changing climate dwarf individual human agency to such a degree that even Hollywood seems to have trouble coming up with a plausible hero’s journey.

This does not mean that no filmmaker has ever tried. One of the first and by many counts still the most influential and successful of cli-fi movies was Roland Emmerich’s sci-fi disaster film *The Day After Tomorrow*. Like no other filmmaker to date, Emmerich uses the representational power of film to translate abstract scientific notions about our changing climate into spectacular images of a hostile

nature and a melodramatic story about a paleoclimatologist and his teenage son who get separated in the cataclysmic events that follow the stalling of the Atlantic Meridional Overturning Circulation. As is typical for Hollywood action movies, both father and son are idealized heroes who must overcome seemingly unsurmountable obstacles before they can be reunited in the end. Quaid's Cassandra-like scientist tries everything he can to warn the world of the coming climate catastrophe. And when that fails, he tries to save as many people as he can, including his son. Those who believe him – like his son – have a chance to survive the abrupt and drastic climate shift, and those who doubt him – like the American government – are doomed. At the end of the film, the new US President (and former Vice President) is forced to admit that he “was wrong” to ignore scientific insights in the reckless pursuit of economic growth. He has learned that by way of an onslaught of natural catastrophes that are only vaguely related to actual scientific projections but highly effective in engaging audiences on the visceral level in an entertaining cinematic spectacle of doom and disaster. While the central cause of the chain of disasters depicted in the film – the stalling of the Atlantic Meridional Overturning Circulation – is an actual scientific scenario that in recent years has received renewed attention due to the so-called “cold blob” in the North Atlantic, the spectacular tornados, tidal waves, and sub-zero storms freezing everything on contact are not part of that scenario (Rahmstorf et al.).

The film thus perfectly fits Schneider-Mayerson's description of “a typical example of American climate fiction: a cautionary tale of a quasi-apocalyptic climate-changed near-future, intended to dramatize what might happen if readers [or viewers] do not intervene in the present to slow climate change” (“Just as in the Book” 338). And much to the surprise of those who criticized the film, that tale was actually quite effective. Empirical research has shown that *The Day After Tomorrow* “had a significant impact on the climate change risk perceptions, conceptual models, behavioral intentions, policy priorities, and even voting intentions of moviegoers” in the United States and elsewhere in the world (Leiserowitz 34).² These unexpected results led researchers and science communicators to rethink the role of popular culture in climate change communication for the very reason that it engages people's emotions in ways that traditional science communication cannot tap into (Abbasi). And so it is perhaps not surprising that Emmerich's film was still used by science communicators ten years after its release as a means to engage and connect with the general public, precisely because it is so drastic in its depiction of climate change and so entertaining (Svoboda). Ecocritics have analyzed its narrative strategies, drawing attention to the way it uses visual specta-

2 See also Reusswig 43.

cle and a melodramatic family-reunion narrative to engage viewer emotions.³ And it is important to note that many of those emotions are positive even though the underlying scenario is catastrophic. In fact, the enticing combination of excitement, awe, admiration, and curiosity is one of the reasons why viewers enjoy the dark worlds of action-driven cli-fi films like *The Day After Tomorrow* (Weik von Mossner, *Affective Ecologies* 158).

However, few other films fit Schneider-Mayerson's definition of climate fiction to the same degree. Movies like *Snowpiercer*, *Mad Max: Fury Road*, and *Interstellar* (2014) all feature "quasi-apocalyptic climate-changed near-future[s]," but whether they understand themselves as "cautionary tales" or are read that way by viewers is a different question ("Climate Change Fiction" 309). Unfortunately, we still do not know enough about what exactly audiences take away from watching cli-fi films, but a recent study by Helena Bilandzic and Freya Sukalla suggests that even movies that are less openly moralizing than *The Day After Tomorrow* can have an impact on intentions for pro-environmental behavior (i). The study focuses on Tim Fehlbaum's near-future science fiction film *Hell* (2011), which imagines the cannibalistic consequences of a dysfunctional biosphere in ways that are reminiscent of John Hillcoat's *The Road* (2009), only in this case it is not the lack of sunlight that causes the problem, but an overabundance of it. Even though climate change is front and center in this German-Swiss film, it remains unclear whether the drastic conditions it depicts were caused by human activities. All we learn is that solar radiation has increased to a point where it is dangerous to go outside and that water has become as scarce as food in this future world. The lethal power of the sun is made visceral for viewers through the overexposed, dusty look of the images, the actors' physical performances of suffering, and the desiccated worlds around them. But as in *The Road*, the worst enemies in this hostile world are other humans who are so starved that they have taken to slaughtering humans like animals. And, as in *The Road*, viewers are cued to empathize with the film's protagonists, who try to escape the cannibals and hope to get to a place on Earth that is still somewhat more livable.⁴

Unlike *The Day After Tomorrow*, then, *Hell* does not make any overt link between scientific scenarios regarding CO₂ emissions and global warming, and the nightmarish future world it depicts. Bilandzic and Sukalla's study shows that the film nevertheless had an "indirect effect on behavioral intentions by raising the personal norm (a sense of personal obligation to act)." Moreover, narrative en-

³ For detailed ecocritical analyses of *The Day After Tomorrow*, see Ingram; Murray and Heumann; Weik von Mossner, *Affective Ecologies*.

⁴ For a detailed analysis of the film's narrative and emotionalizing strategies, see Weik von Mossner, "Visceralizing Ecocide."

gement in the film also had an indirect effect on such intentions by increasing guilt, which the researchers were able to link directly to their subjects' narrative engagement. "The more the audience was cognitively and emotionally involved with the narrative," observe Bilandzic and Sukalla, "the more they experienced the moral emotion of guilt that results in stronger intentions to act" (i). Cognitive and emotional involvement – involving a sense of immersion or transportation into the cinematic storyworld – was an important driver for attitude and potential behavior change, a result that is consistent with other research in social psychology and media communication.⁵ One lesson, then, that we can learn from the empirical studies of *The Day After Tomorrow* and *Hell* is that climate fiction does not have to be scientifically accurate or even explicit about the cause of the climate change it depicts in order to have an impact. Secondly, as I have argued elsewhere, it seems to be misguided to assume that the cueing of negative or even painful emotions (such as guilt) is necessarily problematic or leads to an apathetic disengagement from the issue, in particular if such emotions are cued in conjunction with more positive emotions such as curiosity, hope, admiration, and amusement, as is the case in most fiction films.⁶

Precisely this argument has been made repeatedly, however, by journalists and climatologists alike, who complain about the tendency to frame climate change narratives in negative, dystopian, or even post-apocalyptic terms.⁷ Ecocritics such as Nicole Seymour have argued that a more playful and ironical stance may be more effective than the overly "serious affective modes" we find in many environmentally oriented films. "Even when leavened by a dose of humor," writes Seymour, these films "tend to be underwritten by earnest beliefs" and thus "solicit serious affective responses from viewers, such as reverence, guilt, dread, and conviction" ("Ecocinema" 61). As Bilandzic and Sukalla have shown, such serious affective responses may not be ineffective, but Seymour nevertheless urges critics and filmmakers to embrace more irreverent approaches, arguing that they "can foster a self-critical attitude that does not hinder but in fact enables environmentalist work" (62). Her examples of films that employ irony include Daniel Gold and Judith Helfand's climate change documentary *Everything's Cool* (2007), to which we could add Laura Gabbert and Justin Schein's *No Impact Man* (2009), Simon Lamb's *Thin Ice* (2011), and Kip Andersen and Keegan Kuhn's *Cowspiracy*

⁵ See, for example, Green and Brock; Mazzocco et al.

⁶ These positive emotions can be cued by a number of elements in the film, be it dramatic tension or viewers' empathic relationship to the protagonists of the film; Weik von Mossner, "Climate Change." On the mix of negative and positive emotions in fiction films, see also, Plantinga.

⁷ Such arguments abounded in the media response to Wallace-Wells's article "The Uninhabitable Earth."

(2014). But in the end, these films, too, remain “underwritten by earnest beliefs” and a serious desire to move viewers to become more climate-conscious and, ideally, adopt a more sustainable lifestyle.

True irreverence, or “bad environmentalism,” as Seymour has called it in her recent book, may indeed be hard to find among filmmakers who invest time, effort, and money to make a film about climate change (*Bad Environmentalism*). But in recent years there have been a string of documentaries that are a little more radical in their affective approach without sacrificing sincerity. Instead of just throwing in some irony to cut the edge off their dire message, these films aim to provide what everyone seems to be waiting for these days: positive, utopian visions of the future. Such visions, the argument goes, can cut through apathy and fear by instilling in us both the hope for a better and more sustainable future and the belief that such a development is realistic and achievable. Pessimists might argue that the very combination of those two attributes – hope and realism – makes the creation of such visions an impossibility because climate change has already advanced too far. But a number of documentary filmmakers have nevertheless embraced what the German philosopher Ernst Bloch called concrete utopianism – “the unfinished forward dream” – and employed it in their cinematic visions for the future (157). And as it turns out, such visions can even be funny and self-ironic.

Looking on the Bright Side: From Intentional Communities to Ecotopian Visions

When looking at the utopianism of recent climate change films, it is important to keep in mind Bloch’s differentiation between “abstract” and “concrete” utopias. While the former is a form of escapism and has compensatory functions, Bloch understands the latter as a form of social dreaming that has “the power of anticipation” and serves as a potentially transformative “methodical organ for the New, an objective aggregate state for what is coming up” (157). As such, it is entwined with hope rather than just with the desire for a better way of being. Diana Fritz Cates reminds us that “we hope only in what we regard as possible,” meaning that our utopian projects are always circumscribed by “limits of knowledge and imagination, partial perspectives, self-interest biases, [and] the consequences of previous, poor choices” (25). It also means, however, that in order to truly hope rather than just desire, we need to believe that something might actually happen. And so a climate change film that wants to instill not only the desire for a better future but also the hope that it can be attained needs to convey that there are

realistic ways of achieving this goal by anchoring itself in the realities of the present.

An incomplete list of films that aim to do this includes Josh Fox's *How to Let Go of the World* (2016), Cyril Dion and Mélanie Laurent's *Demain* (Tomorrow, 2016), Damon Gameau's *2040* (2019), and the 2019 HBO documentary *Ice on Fire*, directed by Leila Conners. Instead of dwelling on the potential horrors of the upcoming climate disaster – with only the last few minutes focusing on possible solutions to the crisis, as many other climate change documentaries have done, these recent films try out a different approach. In a way, they turn that narrative strategy on its head by dedicating most of their running time to exploring possible solutions and featuring people who are *already* working on these solutions.

The French film *Demain* is a particularly interesting example. The filmmakers – the actress Mélanie Laurent and the civic activist Cyril Dion – take their viewers, for example, to the urban gardens of Detroit and Todmorden; to San Francisco to take a look at the city's advanced recycling and composting program; to an organic permaculture farm in Normandy; to an envelope factory in Lille which reinvests its profits to make the company more ecologically sustainable; and to Copenhagen, which boasts an admirable renewable energy model and pervasive cycling culture. While the filmmakers are present in their film and – as young parents of a small child – serve as identification figures for viewers who are worried about the prospects of the next generation, it is the people whom they visit during their global quest for solutions that invite hope and admiration. Most of them are “normal” citizens who have been able to make a difference at the local level, not only in their own lives but also in their communities. In their conversations with Laurent and Dion, they make clear that it takes guts, tenacity, and often also a healthy dose of humor to start doing things differently from the way they were previously done and convince others to follow in your footsteps. The other lesson that can be learned from the featured projects is that they build a sense of community and instill feelings of hope, pride, and confidence in participants.

The uplifting affective dimension of *Demain* has been of central importance to its warm reception. The focus on concrete solutions is “refreshing,” writes Nicole Herrington in her review for *The New York Times*, but the film's “real triumph is its pervasive feeling of hope.” It is a feeling that indeed seems to have been “infectious,” as Herrington predicted. *Demain* has earned over 11 million dollars at the box office – which is quite remarkable for a crowdfunded documentary film – and was screened at places like COP 21, the European Parliament, and the United Nations (“Demain”). Even more remarkable in terms of tangible impact, however, is the fact that it encouraged so many viewers to start working on small-scale solutions themselves that Dion ended up shooting a sequel, entitled

Après-Demain (2018), which showcased some of the more than 1,000 projects directly inspired by the film. While this is not a peer-reviewed scientific study of narrative impact, it is an impressive practical demonstration of what a film can do if it manages to inspire individuals and communities to take action.

A more recent and equally remarkable example of this new trend in climate change cinema is the Australian film *2040*, which deftly combines fact and fiction in a way that is reminiscent of *The Age of Stupid* (Armstrong). Unlike Armstrong's film, however, *2040* is unabashedly optimistic in outlook. As Damon Gameau explained in an interview at the 2019 Berlin Film Festival, he conceived *2040* as:

an antidote to all the doom-and-gloom, dystopian narratives about the future that we find at the moment [. . .] I just felt like [. . .] there is another option. We don't have to just march blindly into that future. That it's important to throw up different visions of the future and especially around the climate, which feels a bit helpless at the moment and people don't know what to do. That there are solutions and there are great people doing amazing things around the world. So can we shift that spotlight away from the fear and the doom-and-gloom and put it onto promoting these people who are doing the right things? ("Interview: Damon Gameau")

Just like *Demain*, then, *2040* focuses on individuals and communities who are already engaged in activities that – if adopted by more people around the world – would significantly curb CO₂ emissions and make communities more resilient to climate change. In indirect reference to Bloch, Gameau's film calls such activities "fact-based dreaming," which, just like Bloch's idea of concrete utopianism, is not based on the purely hypothetical but on an "extrapolation of what people already do now." Where *2040* differs somewhat from *Demain* is in its tone and in the overall presentation of the climate-friendly lifestyles it portrays.

Like Laurent, Gameau is an actor-turned-documentary filmmaker. The success of his first documentary, *That Sugar Film* (2015), taught him that a more humorous and playful approach can work well when dealing with serious issues (in this case, the detrimental effects of sugar on human health), which is why *2040*, too, relies on humor to loosen up its environmental message. Following a conviction that seems to resonate with Seymour's call for a more "irreverent" ecocinema, Gameau suggests that "if we really want to engage a family and get the conversation going then [. . .] it's important to have elements of fun and playful [ness]" because "people are more open to learning and listening when they are engaged and there is something new to look at" since "you're activating a different part of your brain" ("Interview: Damon Gameau"). This implicit reliance on the insights of cognitive psychology shows that documentary filmmakers have begun to consider human "hardware" – a.k.a. the ways in which our brains are wired – when they conceptualize films to not only entertain but also teach. In an

other interview, Gameau explains that he learned from an environmental psychologist that getting constantly bombarded with fear-inducing messages will lead us to “shut down parts of our brain that are problem-solving areas or creative thinking areas” and that this in turn makes it “very hard getting people to act on this topic” (“2040: Behind the Scenes”). His documentary tries to avoid such cerebral shutdowns not only by avoiding fear-inducing messages but also by extrapolating current experiments in sustainable living into the future, using acting and animation to showcase what life in 2040 might look like if everyone would embrace them.

The use of animation is nothing new in the genre of climate change documentaries. *An Inconvenient Truth*, *The Age of Stupid*, and *Cowspiracy* are all examples of earlier films that include animation to help viewers envision future states of the world. However, instead of flooded coastlines, drowning polar bears, and burning cities, *2040* shows what places could look like if we did the *right* thing. In addition to allowing viewers (and Paul Hawken) to enjoy the pastoral view from the top of a wind turbine, it presents them with time-lapse animations that show urban freeways converted to pedestrian-filled linear parks and tar sand oil fields growing thousands of trees until they are covered in lush green. While these enticing visions of the future are designed to cue desire in viewers, the concrete portrayals of current efforts in that direction are meant to show that these optimistic future states are, in fact, achievable. “The key purpose of *2040*,” says Gameau, “was to install hope in people” in the Blochian sense (“Interview: Damon Gameau”). That perhaps explains the film’s explicit focus on children. Not only was *2040* conceptualized as a family film, but it also puts children at the center of its narrative. This is most obvious in the ostensible addressee of the film, which is framed as a letter to Gameau’s four-year-old daughter Velvet. Not only is the real Velvet frequently featured in the film, but so is the actress that plays Velvet as a twenty-five-year-old in the film’s version of the year 2040. There, she emerges as a contented young woman who enjoys the advantages of an ecologically sustainable way of life and, when learning about the lifestyle of the 2010s, incredulously asks her middle-aged parents, “What were you thinking?” That Gameau and his wife – who is also an actor – play their own aged, future selves with the help of make-up and animation demonstrates his unorthodox and extremely hybrid approach to climate change storytelling. It is an approach that invites viewer identification from at least two age groups. The parental generation might identify with Gameau and his wife, who are desperate to find out about ways to secure a sustainable future for their daughter. In this way, the film very much mirrors the narrative strategies of *Demain*. In addition, however, *2040* also invites younger viewers to identify – if not with the four-year-old Velvet, then with her twenty-five-year-old alter ego, who lives a “normal” life in an attractive-looking future

instead of the catastrophic one that many of them fear, in part because of the dystopian media representations with which they have grown up (Plautz). That the ecological awareness of this generation is much higher than that of any generation before them at their age is demonstrated in the short statements from young children that are interspersed throughout the film, which are often thoughtful and sometimes funny. They are all shot in close-up before a neutral gray background, allowing viewers to fully focus their attention on the face of the respective child and their personal visions for 2040. And, as the critical and commercial success of Benh Zeitlin's brilliant low-budget film *Beasts of the Southern Wild* (2012) has demonstrated, putting the emotions of children at the heart of a story about climate change and environmental injustice can be emotionally powerful also for older audiences.

Even though *2040* has not enjoyed the extraordinary global success of *Beasts of the Southern Wild* or that of *Demain*, Gameau's film was well received in Australia and has won several awards. Perhaps unsurprisingly, its unabashedly optimistic display of an ecotopian future has also been criticized for being willfully ignorant and somewhat naïve. "It's understandable why the filmmaker didn't want to get bogged down in tackling those awfully adult, awfully sobering ideas of vested interests," writes Luke Buckmaster in his review for *The Guardian*, thus making clear that the utopian world seen in the film is unlikely to take shape within the foreseeable future. Buckmaster's critique is justified, but it is also true, as Claudia Lenssen has observed, that *2040* provides viewers with vivid images of things they might have heard about but not have been able to picture in their minds – things such as decentralized energy generation, communalized electric transport systems, CO₂ sequestration, or the restoration of devastated marine environments. And so it is telling that even Buckmaster's verdict is positive in the end. "In *2040*," he writes, "Gameau defaults to the position of inspiring people rather than alarming or overwhelming them. You leave the film wanting more, not less, of these sorts of productions."

The use of humor and ecotopian visions of the future is, of course, not limited to documentaries, but it is still a rare combination in fiction film. One of the few examples is Alexander Payne's science fiction comedy *Downsizing* (2017), starring Matt Damon, Christoph Waltz, and Kristen Wiig. Rather than providing viewers with another doomsday scenario, *Downsizing* imagines a future world where people can choose to be shrunk to a height of five inches, thereby minimizing their ecological footprint while maximizing the housing and consumer goods they can afford. A light-hearted social satire with occasional (mis)steps toward the decidedly weird, the film checks many of the boxes that Seymour considers definitive of a new, irreverent form of environmental storytelling. Despite its major star

power, however, it flopped at the box office.⁸ Reviewers have speculated that its poor showing was related precisely to the fact that instead of the usual dramatic dystopian fare, it provides viewers with a vaguely utopian vision that, in the end, is boring (Sims). However, one could also make the argument that – as long as we have not figured out how to shrink people to the height of five inches – the film envisions an abstract rather than a concrete utopia and thus at best qualifies as escapism instead of harnessing “the power of anticipation” (Bloch), as *Demain* and *2040* aim to do. If it is true that people are desperate for actual solutions to the climate crisis, then *Downsizing* does not qualify as a film that imagines such solutions for them. This might have contributed to the mediocre reviews and poor box office of the film.

Conclusion

A closer look at how climate has been featured on cinema screens shows that the situation is not nearly as bad as journalists and scholars seem to assume when complaining about the overly serious and/or apocalyptic tone of climate change cinema. The affective registers of such films have diversified much more in recent years than is often acknowledged. What is arguably still missing is a greater diversity in terms of both the filmmakers themselves and the communities they portray. While both *Demain* and *2040* showcase sustainable practices in communities around the world, these films are firmly anchored in Western worldviews. And even documentaries that focus exclusively on non-Western and non-white communities, such as Briar March’s *There Once Was an Island* (2010), John Shenk’s *The Island President* (2011), and Matthieu Rytz’s *Anote’s Ark* (2018), were made by filmmakers who are outsiders to these communities. There are exceptions to this rule, such as Zacharias Kunuk’s *Inuit Knowledge and Climate Change* (2010), but, aside from film festivals, they rarely make it to the big screen. This is unfortunate, since not only can such films provide alternative perspectives on the social and ecological repercussions of climate change, they also use different narrative techniques that might engage viewers differently on the emotional level.

This also means that we should not jump to conclusions about which affective registers are most effective – or assume that one such register fits all audiences. As David Roberts has pointed out, we do not even know yet whether hope inspires more action on climate change than fear, since the scientific evidence on this matter is still inconclusive. But what seems to be certain is that different af-

⁸ *Downsizing* had a budget of \$68,000,000 and earned \$55,003,890 worldwide, “*Downsizing*.”

factive approaches can speak to different audiences – or even to the very same spectator at different times of their life journey. Those who still believe that climate change does not exist, or that it will not ever affect them and their loved ones personally, might be shocked into awareness by more dystopian modes of narration, be it in fiction or nonfiction film. Others might be so saturated with the doom and gloom that what they need to move forward is a glimmer of hope and concrete information about how they can personally make a change in their life and inspire others to do the same. It is thus a sign of hope that climate change cinema is increasingly diversifying to offer a wide range of approaches on how to represent, communicate, and possibly tackle, climate change.

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Laura op de Beke

14 Premediating Climate Change in Videogames: Repetition, Mastery, and Failure

Introduction

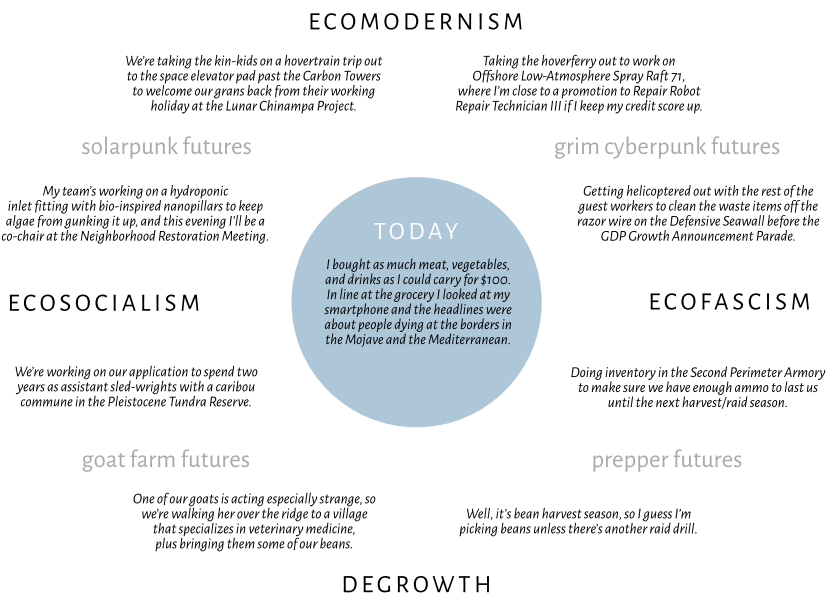
“How is your day going?” Depending on different climate change responses, your future answer may be any of the variations collected in Charlie Loyd’s diagram (see Figure 1). In a number of joking but astute vignettes, he plots his visions of the future along two axes that measure political ideology and technological or economic outlook. What may strike us as we read through them is that some of these futures seem more familiar than others. We know about prepper futures from American television shows like *Doomsday Preppers* (Madison et al.), and cyberpunk has been an established science fiction sub-genre since the eighties, popularized in novels like William Gibson’s *Neuromancer* (Gibson) and films like *Blade Runner* (Scott).

The ecomodernist futures in the diagram are some that feel especially familiar within this genre, with their robots, hover trains, and space elevators, but also – notably – their aerosol injections (“low-atmosphere spray”) and carbon capture and storage infrastructures (“carbon towers”), which rely on technologies already being cautiously considered in climate change mitigation by the Intergovernmental Panel for Climate Change (Edenhofer et al. 484). In juxtaposition to these more familiar visions for the future, the “goat farm futures” in the ecosocialist, degrowth corner of the graph appear all the more mysterious. Where are they to be found in popular media? What television shows, what novels, what movies, and what videogames spring to mind?

This is where especially videogames come up short. As I have argued elsewhere, although many videogames are increasingly interested in engaging with environmental issues like climate change, they also display a “strengthening commitment to narratives of progress and growth” (op de Beke). This trend evinces a lingering sense of optimism about the time to come, induced by techno-utopianism that is fast becoming outdated. If anything, the years since the Great Acceleration of the 1950s have demonstrated that techno-industrial expansion comes at a terrible price, to be paid by future generations whose lives will be irrevocably marked by climate change. Aleksandra Wagner and Damian Gałuzka also find that many videogames reproduce rather than criticize hegemonic discourse on climate change and energy transition. In their study of the

How my day's going in various climate response futures

Political compasses are never very good but at least they can be silly



2019-08-17

Figure 1: Climate Futures by imagery specialist Charlie Loyd (@vruba on Twitter)..

resource-imaginaries of 51 energy-themed videogames, they conclude that these games continue to associate fossil fuels with “stability and centralized control”, while casting renewables as marginal to the resource landscape (9 of 10). The representation of resource politics in games thus reproduces “a hegemonic discourse governed by neoliberal market logic, focused on control and individual profits. The better future is an extended present with new technologies and old rules” (10 of 10).

To account for the tenacity of these growth-oriented techno-futures found in climate change videogames, I argue for the overriding influence of a certain ludic temporality, one that Richard Grusin has dubbed *premediation*. Premediation involves the act of cultivating a multiplicity of future scenarios, while at the same time delimiting their scope and variety to suit notions of plausibility that are fed by deeply presentist concerns. Premediation satisfies the desire to control the unknowability of the future by imbuing it with a sense of inevitability. In this article, I read climate simulation games as specifically illustra-

tive expressions of premediation. By doing so, I expose an important affective dimension rarely addressed in the more common kind of proceduralist criticism that is often applied to climate simulation videogames. My argument also includes methodological intervention. Too often simulation videogames are read as purely rationalist arguments instead of deeply affective interactions. Consequently, throughout this article, I want to make the case that proceduralist readings of videogames must be complemented by methods that attend to the affective dimension of play. In such an approach, a focus on the temporalities at work in videogames – such as repetition, mastery, and failure – is crucial.

Green Media, Green Games

The study of climate change videogames is part of the larger field of green, or environmental, media studies. Following the rise of climate change fiction and its enthusiastic embrace by literary scholars (Johns-Putra; Trexler), a similar undertaking has taken off in the field of videogame studies, where questions about how videogames engage with the environment and environmental collapse are being asked more and more frequently (Abraham and Jayemanne; Chang; Chang and Parham; Condis; Kunzelman; Lundblade; Millburn; Raessens, “Collapsus”, *Eco-games*). Until a decade ago, however, videogames explicitly dealing with climate change were few and far between, nor did they garner very much commercial or critical success. Many of them were developed as edutainment and remained limited in their dissemination and appeal. But as concern about climate change grows, so does its prevalence in popular culture. Currently, we see climate change videogames pop up regularly in game competitions which screen for games of social impact (e.g., Games for Change), in independent development – for example, *Imagine Earth* (Serious Brothers) and *The Universim* (Crytivo) – as well as in big budget production, such as *Sid Meyer’s Civilization VI: Gathering Storm* (Firaxis Games).

Owing to the novelty of this surge in engagement, to date, scholarship on the topic of videogames and climate change remains limited, but what scholarship there is can benefit from pointing out the unique ways in which videogames are able to stage the issue of climate change. Videogames are interactive, procedural media objects, and they give players the ability to play around with ludic temporalities (Hansen). One could argue this gives videogames a certain edge: playful simulations can take as their subject processes as large and protracted as climate change without limiting their focus to an anthropocentric perspective of individu-

als or events. Additionally, simulation games often encourage players to play through scenarios more than once, allowing players to find and test different outcomes, making them apt tools with which to explore themes like contingency and responsibility. I suggest the kind of reversible, branching temporality they demonstrate can be described – following the notion of procedural rhetoric – as procedural futurism.

Simulating Climate Change

Many climate change videogames fall into established videogame genres: the city builder, the god game, and the resource management game. While I do not have the space to introduce each of these genres at length, it is important to point out that they generally rely on the power of simulation to persuade and engage, as opposed to narrative intrigue. City builders, god games, and resource management games rarely feature developed storylines. Instead, they model, or simulate, existing or fictional processes in an interactive manner. For scholars who choose to engage with videogames as predominantly rule-based systems, and who in doing so may ascribe to the discipline of ludology, there exist a number of helpful heuristic approaches. Analyzing a game's procedural rhetoric is one such approach. Coined by Ian Bogost in his book *Persuasive Games*, procedural rhetoric is a term used to describe the argumentative claims videogames make by simulating processes, for instance, climate change. In Bogost's understanding, videogames are able to provocatively simulate rules and outcomes, thus commenting on the way these processes unfold in the real world. Procedural futurism is a term that describes more specifically the way in which videogames argue for the viability of certain futures.

Take, for example, *Fate of the World* (Red Redemption), a videogame I refer to throughout this article. *Fate of the World* is a turn-based strategy game produced in collaboration with climate scientist Myles Allen; the game thus boasts a certain scientific credibility. It casts the player as the head of GEO; a global task-force charged with keeping global average temperatures from exceeding a 3 degree increase over the years 2020–2200. What follows is a kind of digital card game. Every turn, you choose cards that represent policies in the fields of development, energy, conservation, and science research, for instance, researching bio-fuels, phasing out cars, or investing in smart electricity grids. Progressing to the next turn means skipping five years ahead and reviewing to what extent the cards you played impacted the situation. You can review this outcome based on a selection of global newspaper headlines, or you can choose to look at a set of

graphs and statistics. Because of its ostensible realism, *Fate of the World* makes claims about the real-world efficacy of certain policy responses by shooting them down as ineffectual or bad strategy. The inverse is also true; by demonstrating the central role of a tax on currency trading (the Tobin tax) to fund climate change mitigation in developing regions, *Fate of the World* makes a strong claim for its applicability in the real world.

Simulation games lend themselves easily to procedural criticism. Their focus is not so much on telling an engaging or human-centered story as it is on building an intriguing interactive situation. However, proceduralism (or the emphasis of rules over other aesthetic modalities like narrative and audiovisual rhetoric) has been on the receiving end of some very cogent criticism. Pure proceduralism, Sicart argues, is reductionist. It assumes a central authority who encodes meaning into the game and who has omniscient knowledge of the way the rules play out. This assumption ignores the fact that videogames are often subject to unforeseen manipulations by players, which can undermine a developer's intentions. In other words, proceduralism does not acknowledge the player's role in the heuristic process. It assumes game rules are passively internalized by players, when in fact players always interpret, negotiate, and even appropriate the rules of a game. Finally, considering videogames as primarily rule-based systems downplays their fundamental audiovisuality – and leaves us at a loss for judging aspects like tone or register. Is the classic board game Monopoly a celebration of capitalism, or a scathing criticism? Without scouring textual and visual design for signs of, for instance, caricature, it would be very hard to answer this question.

Although it would be wrong to characterize Bogost as a pure proceduralist (hardly anyone is), procedural rhetoric has also been criticized for its supposed reductionism. For example, in his discussion of climate futures in videogames, Abraham points out that games aiming to convince players of the urgency or reality of climate change by simulating its processes, like *Fate of the World*, fail to recognize that this does not address any ideological objections players may have, which cannot be overcome by models, facts, or rational considerations. Abraham argues instead for the power of the more indirect influence of aesthetics, which bypasses potential conscious objections to provocative simulations. Aesthetic choices, like peppering a virtual landscape with wind turbines and solar farms (as in the sci-fi shooter ARMA 3) does not invite rational consideration of the viability of renewable energy. Rather, such a move harnesses the more subtle power of alternative visions of the future, which do not present themselves as arguments but operate on a more subconscious, affective level, suggesting a mode of futurity that does not rely on calculation or probability. Martin Savransky and colleagues argue that this is exactly the sense of the possible which we need to foster, because these rogue futures, “whenever one takes the risk of cultivating

them, can escape the impasses of the present, and lure our practices of thinking, knowing and feeling to unforeseen possibilities” (5).

Calum Matheson, too, faults procedural rhetoric for not acknowledging the “affective economy” (464) that precedes and creates the circumstances for persuasion through simulation to occur. He argues that Bogost’s understanding of rhetoric as persuasion is a limited one and could be supplemented by drawing on psychoanalysis. From a psychoanalytical angle, rhetoric serves not so much to convince others, but rather to convince the self in the face of a repressed trauma derived from a failure of signification. In Lacanian psychoanalysis, the world refuses to be understood, controlled, or predicted to our satisfaction, and so we use symbolic language, or rhetoric, to suture up those tears in the fabric of our perceived reality. These strategies of signification gain power through repetition, becoming tropes and stories. The details of these tropes and stories are less important than their evocation of a powerful sense of self. For example, the fort-da game observed by Freud (similar to peekaboo) allows the child “exercise of control over the conditions of presence and absence, [making it] essentially a simulation that permits agency over a situation in which the child must be passive” (Matheson 472). Crudely put, videogames like *Fate of the World* can be understood as elaborate games of peekaboo, in which perhaps neither the simulation’s rules nor its aesthetics are more important than the fact that the game allows players to repeatedly work through climate trauma from a place of power.

Following Abraham and Matheson, I conclude that any discussion of climate change videogames and the visions of the future they profligate ought to take into consideration the power of iteration, agency, and the significance of the affective context in which play unfolds. This necessitates a broader view of the way in which climate change is represented in popular media, and the circulating affects surrounding the issue. To help me better understand this media landscape, I draw on Grusin’s notion of premediation, which describes a predictive media regime that became prevalent after 9/11, and which now, arguably, influences much of the coverage of climate change.

Premediation and the War on Climate Change

In his discussion on the affective life of media, Grusin explains that affect infuses not just media content, but our interaction with media technologies more generally (*Premediation*). Consider the affective relationship many people have with their mobile phones, which tie us to our loved ones and society and grant us a sense of security.

Similarly, playing a videogame establishes an affective feedback loop between the player and the game that is concerned not just with the affective content of play; there is also affective investment in merely maintaining the loop, which becomes evident when game-flow is rudely interrupted. Moments like these create bigger affective responses than stirring content, Grusin finds. He argues that this desire to be kept in the loop and to avoid the shock of the unexpected by dwelling on the near future is what governs the production and consumption of media after 9/11.

Although 9/11 looms large in his theorization of premediation, Grusin acknowledges that its tendencies were already prevalent in American society before the attack, and that 9/11 merely caused them to surface and intensify (“Media-shock”). In his work on the related notion of “mediashock”, he also flags an elaborate prehistory. I choose to follow Grusin’s emphasis on 9/11, however, because it is the clearest way of presenting his argument, and because of the parallel I want to draw between the “war on terror” and the “war on climate change”. That said, there are other ways of thinking about mediated futures, and one should not take Grusin’s framework to be a totalizing one. But there does seem to be some agreement, for example, from Ulrich Beck, which highlights the importance of staging future catastrophes in steering present action, as well as the lucrative aspects of the manufacture of risk for financial or political purposes. It is Grusin’s sensitivity to affect, however, that makes his work so valuable to me. After all, I am arguing that climate change simulation games operate not just on the conscious level of rational persuasion, but that they participate in wider affective regimes that orient people to the future.

According to Grusin, the immediacy and unpredictability of 9/11 and the way it was framed in the news gave rise to nothing less than full-blown televisual trauma. For Freud, trauma is the belated return of a suppressed memory which manifests in nightmares, phobias, hallucinations, panic attacks, and so on. Traumatic neurosis is thus characterized by the compulsion to repeat – to remember over and over again, compulsively and in a fragmented manner – something that was never lodged properly into one’s consciousness. This repetition compulsion plagued news media in the hours, days, and weeks after 9/11, with news channels looping endless footage of the event and broadcasters often at a loss for words, illustrating trauma’s resistance to language and narrative. In response to this trauma, tendencies that may already have been prevalent in society crystallized to form a media regime that cultivates a kind of defensive prescience. By anticipating, modelling, and exploring disasters to come, mediations of the future serve to evoke a false sense of control over its unknowability, at the cost of a pervasive, protracted low-level anxiety, which, in the context of the war on terror, was exploited to support the logic of preemptive war. As Grusin explains, the war in

Iraq was the subject of intense speculation long before the decision to go to war was even taken. The sheer relentlessness and ubiquity of these predictive scenarios of war engendered a sense of inevitability; however, the US would choose to do it, they *would* go to war with Iraq. What makes premediation harmful, therefore, is its potential foreclosure of alternative futures. The logic of premediation does not care whether the predicted scenarios are accurate or desirable. It only cares about “[linking] the future to the present in a way that tries to ensure that the future will continue to be connected to or grow out of the present”, even if the present is unsustainable (*Premediation* 48).

Premediation extends “beyond 9/11” (143). In the context of climate change, it rears its head in anticipation of natural disasters like heatwaves, hurricanes, and forest fires, as well as in the proliferation of imagined future cities, such as in the “postcards from the future” Andrew Baldwin describes. In *Fate of the World*, climate futures are represented as catastrophes in newspaper headlines: droughts, floods, and the extinction of the giant panda, among others. This allows players to steel themselves emotionally for the kind of news that might be waiting for them in the near future. But in familiarizing ourselves with the catastrophes and solutions that the game foregrounds, what alternative futures are we not seeing?

Videogames are privileged expressions of premediation because of a shared formal logic: “premediation works something like the logic of designing a video game, it is not necessarily about getting the future right as much as it is about trying to imagine or map out as many possible futures as could *plausibly* be imagined [emphasis added]” (46). Plausibility is a key word here. But plausibility is shaped by public opinion, which is subject to change. That which is politically viable or conceivable – as opposed to the radical or unimaginable – is up for construction. The problem with premediation is that it mostly picks up on – and quickly locks into place – that which seems plausible. For example, although *Fate of the World* offers a scenario called “Earth Day”, in which support for GEO is ubiquitous, it also features levels or scenarios in which the basic constraints of the simulation have been tweaked to appease climate sceptics. In “Oil Fix it”, climate change mitigation is financed by expanding the oil industry; in “Denial”, global temperatures do not rise with the increase of atmospheric CO₂; and in “Cornucopia”, fossil fuels never run out. While these scenarios are perhaps not meant to be taken seriously, they are not differentiated from the more scientifically accurate ones. The reiteration of wishful scenarios like these – even if staged playfully – enhances their staying power.

In Grusin’s argument, premediation paved the way for the war on terror. Currently, it is arguably feeding talk of a war on climate change. This is an idea taken up by environmentalists like Bill McKibben, as well as proponents of the American Green New Deal (Drum; Stiglitz). Notably, the discourse of the war on

climate change is less futuristic than it is an expression of nostalgia for a period of supposed American national unity, centralized planning, tolerance to austerity, and economic reform during World War II and the New Deal era. The example of the war on climate change thus exposes exactly the kind of futurity that regimes of premediation tend to propagate: a futurity that is limited by the known and the plausible. More ominously, the martial framework of the war on climate change can also be used to downplay legal or democratic objections to the all-too-hasty implementation of controversial climate change mitigation technologies, as in Mills's defense of carbon capture technology as the latest weapon in the war against climate change. Mills compares the challenge of climate change with the Apollo projects and America's involvement in World War II, and in a tone of pure exasperation, he notes that "neither of those crash programs would have achieved much had they been held up by legal challenges requiring that we go to Mars instead, or by protesters chaining themselves to the gates of aircraft factories" (26). In short, regimes of premediation encourage martial attitudes intent on domesticating doubt, delineating the scope of contingency and limiting discord for the sake of continuity.

Many videogames operate within such a martial framework, including many climate change games. Smicker argues, much along the lines of Grusin, that these war games are against futurity, because they show us a future that has already been foreclosed by the capitalist, militarist concerns of the present: "These games are set in the present or near future, and present possible future interventions into present-day hot-spots [. . .] as necessary, unavoidable realities. They enact a particular mode of inevitable futurity" (113). "Proleptic wargames", as Smicker calls them, "and their policy counterparts, are part of a broader effort to contain and manage the futurity of the future – that is its openness, its unknowability, its potential for difference or change" (116). It makes sense to read *Fate of the World* and other similar climate change videogames as proleptic wargames, not only because they often represent climate futures as culminating in armed conflict – fueled by competition for resources and markets – but because they imbue these futures with a sense of inevitability. Kunzelman, too, identifies this as a flaw in many climate change simulation games where climate change can be seen coming long before it arrives, and yet nothing can be done to prevent it from happening. *Civilization VI: Gathering Storm*, for example, presents climate change as a threat firmly plotted on a deterministic timeline from which you cannot stray. It "cannot model a sharp turn in the course of world history" (108), even though that might be exactly what we need.

In summary, what we see in many climate change videogames is the overriding influence of a certain ludic temporality – one that, according to Grusin, has come to characterize media regimes more generally. Premediation follows the

videogame logic of plotting out a range of future scenarios, while at the same time it is subject to the urge to limit that multiplicity for the sake of convenience and narrative control (often called “railroading” in videogames). What is more, there are other ludic temporalities at play in climate change videogames that compromise their ability to engage with the climate crisis in all its complexity. These are the ludic temporalities to which I turn next.

Repetition, Mastery, and Failure

Players come to videogames with certain expectations. Most importantly, they expect games to be fair, and they expect failure to be temporary – a learning moment. In other words, they expect to fail forwards (Anable). As Hanson writes in his book on ludic temporalities, “mastery through compulsive repetition is a familiar trope in games” (111). Historical war games, he argues, allow players “to practice and perfect the past to satisfy ideological and social fantasies of control” (30). As I’ve explained, the same goes for mediations of the future. With each repetition, assumptions about what changes and what stays the same become more fixed, making the future seem more predictable and stable.

However, to achieve mastery, players must suffer failure. Although Hanson does not dwell so much on this aspect of the repetition mastery dynamic, other scholars have (Anable; Juul; Keogh). Aubrey Anable, particularly, writes at length on the affect of failure and its role in neoliberal culture and politics, which holds people individually responsible for failing to succeed. Most videogames mirror this neoliberal understanding of failure as a personal shortcoming. However, there are also videogames that can “shift our attention away from perceived personal failings and back to the failures of a larger ideological formation – say, a user interface, a digital platform, or even an economic system” (129). These videogames may feature excessively difficult, opaque controls or situations that simply cannot be won. Rather than celebrate failure, Anable argues, these games are invitations to “flail with [failure] for a while and learn its contours” (129). I propose that *Fate of the World* is such a game to flail and fail with.

As existing readings of *Fate of the World* point out, the game is exceedingly, punishingly difficult (Kunzelman; Smith). Smith gleans a handful of responses from reviews that characterize it as sobering, scary, frustrating, and even humiliating. From a ludological perspective, modelling difficulty is part of procedural rhetoric (Frasca). By modelling difficulty, videogames operate with a unique granularity that can be used to argue for the viability of one set of choices as opposed to another. For example, by exaggerating their strategic importance, *Fate of the*

World emphasizes the controversial use of aerosol injections and carbon capture and storage as crucial assets in the war against climate change – following Allen’s strong support of those technologies. However, this is not the biggest takeaway of the game, as only a handful of players will actually be able to reach its final stages. Most players will only struggle and fail. How do we make sense of this failure? And what does it mean to lose the war on climate change?

Smith argues that *Fate of the World*’s difficulty is unproductive, because it disempowers the player. Additionally, I would add, it might cause frustration and resentment to build up, which leads to dark play (Mortensen et al.). Dark play occurs when players embrace morally reprehensible subject positions or otherwise engage in ethically questionable play practices for the sake of destructive glee, or merely for the joy of being contrarian. Dark play is common in simulation climate change games. *Fate of the World*, too, acknowledges the destructive urge by offering a final scenario that unlocks after you’ve achieved all the other levels. In the scenario “Dr Apocalypse”, you aim for a negative score – ramping up temperatures as much as you can to score a maximum number of casualties. Dark play illustrates how the accretion of failure prompts a certain violent affect to develop, leading to a kind of refutation of the game’s premise. But what if the player’s refutation of *Fate of the World*’s premises were to go even further? In my own multiple interactions with *Fate of the World*, I have never been able to beat its toughest levels. Rather than suffer these failures personally, though – asking what it is that I am doing wrong – I think it is more productive to ask what the game fails to do for me. Shifting criticism like this opens up a space to question the simulation’s presumptions. If *Fate of the World* is so difficult that barely anybody can beat it, maybe we need a different way of managing climate change, one that the simulation fails to capture.

Throughout this article, I have read *Fate of the World* as an elaborate game of peekaboo, as a proleptic wargame, and, ultimately, as a game to fail with. Most importantly, I have tried to make explicit the way in which its engagement with climate change is affectively charged and preoccupied with managing anxiety over the future. There are better and worse ways to deal with this anxiety. Proliferating and thereby emotionally investing in only a limited set of responses born from presentist concerns only serves to close off the future. But flailing with failure can give us a much better understanding of the ways in which certain systems let us down, allowing us to become aware of our assumptions and expectations. In the final part of this article, I look at one more videogame to fail with, in order to demonstrate more convincingly how through failure we can learn that we already inhabit a damaged planet, and there is no going back from where we are. CO₂ takes centuries to be absorbed back into the sea and ground. It is important not to look away from this mess by putting our faith in techno-fixes, but

to stay with the trouble, as Donna Haraway writes, and to find ways to salvage better means of living amid the wreckage of the present.

Goat Farm Futures

With a little bit of imagination, one could read *The Stillness of the Wind* (Cardenas), which has all the trappings of a farm game, as a climate war game instead – except, unlike *Fate of the World*, this game gives you a boots-on-the-ground perspective. From such an angle, different concerns present themselves. Instead of trying to secure a sense of mastery over the future, *The Stillness of the Wind* asks its players to make peace with a present in which the future is unavailable to them. In doing so, our attention is turned to the here and now, snapping us out of the future-focused dynamic of premediation, revealing other latent temporalities in the present and thereby allowing us to participate in what Roy Scranton calls learning to die in the Anthropocene.

As a veteran, Scranton is a vocal critic of the notion of the war on climate change. War brutalizes people, and total mobilization would entail social upheaval and political compromise, which runs counter to the myths of national unity and smooth transition that undergird the discourse of the war on climate change. In his own contributions to this discourse, Scranton emphasizes that the most important thing being a soldier ever taught him was to embrace the inevitability of his own death in order to stay alive. In the age of climate change, he argues, this insight ought to be scaled up to make us realize there is no going on as we have before. This is not an expression of hopelessness; Scranton is after a creative destruction. Civilization must die a kind of death in order for new possibilities to mushroom into existence. To do so, he argues that “we must suspend our attachment to the press of the present by keeping alive the past” (*Learning to Die in the Anthropocene* 108). As I will explain, *The Stillness of the Wind* shares this thematic interest in memory as a way to reveal latent temporalities in the present.

At first glance, *The Stillness of the Wind* looks like a farm game, which typically introduces players to a virgin plot of land they are encouraged to develop by expanding production, amassing wealth, and investing in technology, while managing social ties with the local community. Farm games are essentially narratives of progress in which everything comes easy, and whose appeal rests in their ability to cultivate a kind of productive bliss. They often feature repetitive, rhythmic gameplay based on simulated diurnal and seasonal cycles. Because of these schedules, players are encouraged to develop carefully timed routines in order to

optimize productivity: water crops, feed animals, weed gardens, eat, sleep – repeat. Every day is comfortably the same, predictable, and easy to plan for. Unlike a typical farm game, however, *The Stillness of the Wind* opens on an existing, run-down farm, and the player's character is no strapping youth, but an old woman called Talma. Playing as Talma, you eke out a monotonous existence on a desert plain raising goats, making cheese, and reading mail from your relatives in the city – or on the newly built lunar colony (the only detail that flags this game as taking place in the future). There is no money to be made, no land to develop, and no goals to achieve. In fact, the game's principal narrative is not one of progress, but decline. However, as I found on my own first playthrough, old habits die hard, and the urge to be productive, to plan for the future – by milking the goats, making cheese, and filling up the storehouse for no obvious purpose – is very strong. What is more, playing for future gains only sets you up for disaster, because the more goods you have collected and the more you are calibrated to your daily routines, the more you stand to lose.

Every day Talma receives mail from her family in the city. At some point, these letters start reporting on a mysterious forgetting illness emptying out entire cities. Gradually, the tone of the game changes from serene to ominous. One day, Talma's brother and sister report that during a recent harvest festival, people suddenly started collapsing, and even vanishing. There seems to have been a blackout, and Talma's estranged daughter Sola, who is on her way back to the farm and passing through the city, explains that she has "started losing pieces of [her] day. The memory of it". Then Talma's sister vanishes. For days there is no mail. Then the postman stops coming. Gradually and almost imperceptibly, the climate changes. Days grow shorter and darker. At night, the farm is harassed by wolves, and when you run out of shotgun shells, your goats inevitably get picked off one by one. Then the earth rots and your flowers die, while an oily black rain falls from the sky. The scene is apocalyptic. Strange dreams come at night: panning shots in greyscale of fields and fields of gravestones, suggesting the scope of the catastrophe extends far beyond the little farm. Finally, flickering embers are visible on the horizon, as if the Earth is on fire. The next morning, the farm is blanketed with a layer of snow, or ashes, and with nothing to do, and nothing to care for, you keel over and die. *The Stillness of the Wind* tricks you into following a particular generic script (that of the farm game): committing yourself to a kind of growth-oriented business model, an optimistic future outlook, and having faith in the rewards of labor. But this is exactly the kind of temporal narrative that has run its course in the age of the Anthropocene. There is no business-as-usual response to a calamity the scope and scale of climate change. Rather than continue with our routines, we must snap out of them and wake up to the present; or as the postman, against the fading light on his last visit to the farm, admonishes the

player to give up their routine: “It is silly to dig up the earth when an avalanche is barreling down the mountain” (Cardenas).

Rather than build up a herd that will inevitably be lost, on my second play-through, I turned my attention to the more enigmatic aspects of the game, aspects that would have been too time-consuming or too frustrating to explore while also running the farm. After all, Talma’s old-woman’s pace means you can only do so much before evening falls. Time spent exploring, though slow and boring, reveals an interesting thematic investment in memory. Whether due to old age or the mysterious forgetting disease, Talma’s memory seems to be fading. In front of a rock in the desert, she muses: “Somehow the scars on the palm of my hand match the edge of this rock”. Talma’s present is a mystery to her, and in order to make sense of it, we need to cultivate memory. This echoes Scranton’s emphasis on the importance of the past. He writes that in order to cultivate memory, “[we] must inculcate ruminative frequencies in the human animal by teaching slowness. [. . .] We must keep our communion with the dead” (*Learning to Die in the Anthropocene* 108). Indeed, going slowly over the land, instead of rushing from goat to goat with your milking pail, allows you to discover and collect small statuettes that are linked to brief snippets of memory, which enable you to piece together an impression of what life on the farm was like when Talma’s siblings, children, and grandchildren still lived there. This knowledge reframes the game’s final image. After Talma dies, the screen fades to grey, slowly zooming out on a picture of the farm with the whole family in front of it and a big, beautiful tree where previously there was only a stump.

Conclusion

Sensing a certain absence in popular engagement with climate change in videogames a few years ago, Benjamin Abraham and Darshana Jayemanne asked a provocative question: “Where are all the climate change games?” One way of revising that question for the present day would be to ask, in videogames, where the goat farm futures are. This question exposes that what engagement there has been with climate change in videogames more recently still lacks the kind of variety that would foster more pluralistic, pragmatic approaches to climate change mitigation. As Holly Jean Buck writes, “so often, climate futures are described in terms of mathematical pathways or scenarios, behind which are traditions of men gaming out possible futures” (48). Buck’s choice of words here is not incidental. As I have argued, one way to account for the tenacity of militarist technofutures is by pointing to videogames’ participation in the larger media regime of

premediation. The ludic temporality that rules this regime proliferates mediated futures, even as it narrows down their scope of the possible.

Other ludic temporalities, too, can get in the way of games' engagement with the climate crisis. Videogames are temporally forgiving, in the sense that failures often tally up to victories. This is deeply misleading in the context of the climate crisis: "How do we retain the freedom of replay and creative exploration that makes games so delightful, knowing that our safety net is also a false bottom conveniently hiding the depths of our indifference?" (Chang 73). One response is to dwell in failure a little while longer. In this article, I have tried to do just that. In the case of *Fate of the World*, the repeated experience of failure to meet the scenario's victory conditions shifts doubt onto the simulation itself – which foregrounds techno-fixes as opposed to other, more systemic, solutions. Moreover, in *The Stillness of the Wind*, failure through character death is encoded into the narrative, and it points to the futility of the business-as-usual approach when the conditions have changed fundamentally. In *The Stillness of the Wind*, failures do not tally up towards a final victory. Players do not fail forwards; but, one could argue they fail sideways, as I tried to do in my second playthrough, where I failed, but this time with more awareness of the way the past feeds into the present. It is this kind of temporality that videogames can cultivate to mediate climate change more meaningfully.

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Keith Moser

15 Inoculation, Climate Change and a Post-Factual, Hyperreal World?

Introduction

Building upon the postmodern concepts of Jean Baudrillard and the branch of psychology and communication theory commonly referred to as “inoculation theory,” this essay explores the deadliest type of fake news in the post-truth era in the form of anthropogenic climate change. As a maverick philosopher who “pre-figured a day when all information might become destabilized” in the digital age in which millions of people reside within the confines of a purely symbolic realm that is “beyond truth and falsehood,” Baudrillard’s bold rethinking of semiotics offers a rich lens for examining the baffling phenomenon of global warming skepticism (Coulter 6; 26). Specifically, the Baudrillardian notions of *hyperreality* and *integral reality* shed light on how we have arrived at this critical juncture in global society “where lies, false equivalences, and pseudoscience trump observable reality” in anti-science, anti-intellectual echo chambers or filter bubbles (Altman 10). The advent of the post-factual world ushered in by late capitalism explains why conservative politicians and pundits have been able to “delegitimize the very idea of anthropogenic climate change” (Prasad 1222) through a steady stream of “alternative facts” despite “a strong consensus [. . .] amongst climate scientists that the Earth is warming” (Williams and Bond 1). The Baudrillardian “epidemic” of simulation, or what theorists in several fields have labelled an infodemic, is responsible for sowing these seeds of doubt through calculated disinformation campaigns funded by the fossil fuel industry that has become the largest purveyor of fake news from an ecological standpoint (Baudrillard, *Seduction* 69).

Although Baudrillard’s concept of integral reality unequivocally implies that resistance is futile in a symbolic universe in which commonplace reality has been effaced entirely by banal, consumerist simulacra, the final section of this postmodern reflection counterpoints this radical claim by proposing counter-hegemonic techniques for undermining the hostile takeover of the real. It is difficult to refute Baudrillard’s position that “the matrix of information and communication” through which the majority of our quotidian experiences are now filtered has diminished our ability to discern between reality and its ubiquitous representation on a plethora of divergent screens. Even if a large segment of the global population has undoubtedly lost the capacity to “know what is real anymore” owing to the deluge of misinformation in which they are submerged in anti-science echo chambers that

perpetuate climate change denial in the face of scientific certainty (Penaloza and Price 127), evidence compiled by scholars who study “attitudinal inoculation” and “misconception-based learning” proves that the “perfect crime” (i.e. the utter implosion of reality) to which Baudrillard alludes has yet to occur. The digital “toxins,” or the “widely distributed pieces of misinformation” that have created a polarized atmosphere in which the subject of climate change is politically controversial are certainly pervasive (Logan et al. 2), but they have yet to substitute themselves for “evidenced-based knowledge resources” completely (Walker 135). Due to the severity of the impending environmental crisis that threatens the existence of all abundant life on this biosphere, “[w]hat non-scientists believe about science is literally a matter of life and death” (Williamson). If we are to stem the tide of the ecological calamity that is upon us, the key to our survival may be to fight against “the murder of reality” that is preventing us from taking action in defense of an imperiled planet (Smith 79).

The Transition from Hyperreality to Integral Reality and the Inception of a Post-Truth Society in Baudrillard’s Philosophy

This disquieting and potentially ecocidal lack of “trust in science” (Hopf et al. 1) inextricably linked to an ocean of simulacra in which the postmodern subject is engulfed at nearly every waking moment is a microcosmic reflection of the “state of *hyperreality*, where little distinguishes the real and the imaginary” (Wright 171). Baudrillard posits that the “gigantic apparatus of simulation” which concretizes so many facets of postmodern life has resulted in a “crisis of representation” of epic proportions (*The Intelligence of Evil* 27; *Forget Foucault* 73). The philosopher highlights how millions of people across the globe “have mistaken the image for the real thing,” because of the self-referential semiotic networks in which they are encapsulated (Root 237). Decades before other French philosophers with the notable exception of Michel Serres would start to investigate the fundamental shift in the capitalist paradigm from a society revolving around the production of material goods and services to an economy driven by the incessant reproduction of images laden with symbolic value,¹ Baudrillard began to reflect upon the repercussions of screen-based (hyper-) reality with the publication of *The System of Objects* in 1968. The unconventional, post-Marxist thinker would continue to hone

1 This point will be further addressed in a later section of the essay.

his theory of hyperreality until his death in 2007. Baudrillard's central thesis that "the image is no longer a pathway to real things, but has become a world unto itself" helps us to understand the initially befuddling anti-science discourse that reverberates throughout climate change denial filter bubbles (Root 240). The fact that "around 20% of the US public" think that "climate change is a scientific hoax" in spite of overwhelming evidence to the contrary lends credence to Baudrillard's conclusion that signs grounded in hyperreality take on a life of their own in a parallel universe of simulation (Cook 287).

In the so-called "second genealogy" (Rubenstein 12), Baudrillard maintains that "we are entering a final phase of this enterprise of simulation" that he terms *integral reality* in works such as *The Perfect Crime*, *The Transparency of Evil*, and *The Intelligence of Evil* (*The Intelligence of Evil* 34). According to Baudrillard, we now live in the "golden age of simulation" (69) in which all signifiers "have lost their referents entirely" (Penaloza and Price 127). After nihilistically proclaiming that the (hyperreal) "substitution of the world is total" (*The Intelligence of Evil* 27), Baudrillard ironically longs for the "happy days, when the simulacrum was still what it was, a game on the fringes of the real and its disappearance" before concluding that "[t]his heroic phase is now over" (69). Baudrillard steadfastly argues that there is no cure for the "acute crisis of simulation" that has culminated in the inception of integral reality in which objective reality has disappeared buried deep under an avalanche of meaningless simulacra (*Seduction* 48). The strong version of Baudrillard's notion of integral reality does not even provide a faint glimmer of hope related to "the inevitable fate of all those who mistake the image for reality" (Leak 130). Whether we like it or not, Baudrillard affirms that "the murder of the real" (*The Perfect Crime* 25) and the "death of (all) meaning" are inter-related problems that cannot be solved (*Seduction* 81). Based on research findings from several different fields, the final section of this essay will deconstruct Baudrillard's prognosis that we are condemned to dwell in a post-factual world uniquely comprised of a "web of stray signs" (74).

The Hegemonic Force of Proliferation in the Post-Truth Era

Baudrillard may occasionally overstate his main point, but his key concept of proliferation explains how "alternative facts" that sometimes border on the absurd have generated their "*own horizon of meaning*" (Vincenti 196). As Alan Logan et al. reveal, "the term post-truth era emphasizes the sheer scale and rapidity with which falsehoods and dark conspiracies can and do travel within our mod-

ern, interconnected world” (8). Baudrillard hypothesizes through his theory of proliferation that there is “*no exit*” from the screen-based images that the post-modern subject passively devours on her-his computer, smartphone, or tablet (Kellner 128). Baudrillard’s notion of proliferation implies that when simulacra are *everywhere*, any frame of reference to an outside reality vanishes. For Baudrillard, “profusion is the most striking characteristic” that renders the destruction of reality through omnipresent signs possible (*La Société de consommation* 19).² With the birth of the digital revolution, Baudrillard describes the phenomenon of profusion as “a carnival or mirrors reflecting images projected from other mirrors” (Kellner 128). For those who seek refuge from the unending onslaught of seductive simulacra, Baudrillard declares that it is too late.

Offering an operational definition of his theory of proliferation connected to what he refers to as *integral reality*, Baudrillard muses, “by giving you a *little too much* one takes away everything [. . .] the more immersed one becomes in the accumulation of signs, and the more enclosed one becomes in the endless oversignification of a real that no longer exists” (*Seduction* 30–33). Owing to the “vast and extensive media networks and techno-sciences in which our lives are immersed,” Baudrillard avers that we have lost our already tenuous grasp on reality entirely (Coulter 4). When we are constantly saturated with a flood of empty images, “the system cracks up from excess” leading to the “collapse of the information systems” that we are witnessing firsthand in the post-factual world (*The Transparency of Evil* 192; 193). It is through the hegemonic force of proliferation that “virtual reality substitutes itself for the real world” (Barron 391). Baudrillard maintains that the post-truth era is concretized by “the invention of an increasingly artificial reality such that there is no longer anything standing over against it or any ideal alternative to it, no longer any mirror or negative” (*The Intelligence of Evil* 34). In the context of climate change denial fueled by post-truth metanarratives, Ajnesh Prasad probes the dangers of living in a world in which “all representations of knowledge are equally valid and equally valuable” (1217). We have reached an alarming point in which millions of people can no longer discriminate between truth claims that are grounded in evidence and sound logic and “alternative facts” inspired by ludicrous, unsubstantiated conspiracy theories.

2 All translations are my own unless otherwise indicated.

The “Illusory Truth” Effect Disseminated through Climate Change Denial Echo Chambers of Filter Bubbles

The “illusory truth effect” empirically examined by researchers from multiple disciplines supports Baudrillard’s theory of proliferation. Scholars have discovered that “repeated information is often perceived as more truthful than new information” for a large percentage of the global population (Hassan and Barber 1). Moreover, mounting evidence suggests that “repeated statements are easier to process” for many individuals as well (Fazio et al. 1993). It is perhaps in this sense in which Trump’s “post-literate,” redundant rhetorical speech should be understood (Moyd and Komska). Although it has been speculated that the extreme repetition that is emblematic of Trump’s conversational style is a reflection of a limited lexicon, it is also possible that the former president is keenly aware of the power of the illusory truth effect. In this regard, Trump’s incessant repetition of the same words that some people find to be mind-numbing may be strategic. As Seong Hong observes, “US President Trump recently highlighted fake news on global warming when he revealed skepticism toward global warming by repeatedly tweeting that humans are not the primary cause of global warming. He has tweeted more than 120 times on global warming since 2005” (2). Instead of possessing a weak vocabulary, Trump may understand that “repeated exposure to fake news causes it to be judged as more accurate and repeating information increases its continued influence” (Drummond et al. 3). Armed with the knowledge that people can be skillfully manipulated through redundant tweets and retweets originating from ostensibly fake news sources, it is plausible or at least possible that Trump et al. intentionally reinforced patently false and misleading post-truth metanarratives about controversial topics, such as climate change and subject matter for political gain. Regardless, the illusory truth effect explains why a recent report uncovered that “more than half of American adults are unaware that a consensus [about climate change] exists, with 28% believing a great deal of uncertainty remains” (“Fake News Threatens”). “The structural and social features of social media have facilitated the development of echo chambers” (Cook 289) that “destroy truth altogether” through proliferation and the illusory truth effect (Gabler qtd. in Lopez and Share 2). “Outlets [. . .] known for peddling in conspiracy theories and disinformation” related to global warming recognize that repeating dubious truth claims *ad nauseam* that have been thoroughly debunked by the scientific community will increase their perceived veracity (Lutzke et al. 2).

Given that “users online tend to acquire information adhering to their world-views” from certain sources (Cinelli et al. 1) where they “are mostly exposed to

viewpoints they already agree with” (Cook 289), the problem of confirmation bias is one of the psychological and structural issues undergirding the evolution of anti-science, climate change denial filter bubbles. For those who have already convinced themselves that global warming is a hoax, “information silos” (Pulliam 35) abound where they can validate their unfounded, post-truth conviction that “climate science is illegitimate” (Cook 290). Online echo chambers are the latest and the most perilous form of obscurantism where millions of web surfers only take into consideration “news stories that are in line with preexisting narratives” (Grüner and Krüger 1). When internet subscribers only “search for information that supports their beliefs and ignore or distort data contradicting them,” they will essentially believe any conspiracy theory no matter how outlandish it is from an objective perspective (Peters 1). A case in point is the purported “QAnon conspiracy about pedophilic Satan worshipers in politics and the media” to which many conservatives in the United States adhere staunchly (Witze 23). From an ecological angle, the issue of confirmation bias is revealing in the context of anthropogenic climate change. Whereas evidence in support of the theory of global warming has been nearly irrefutable for decades, climate change denial propaganda continues to proliferate itself throughout cyberspace in the post-truth age.

The dilemma of confirmation bias, which has fostered a “herd mentality” (Logan et al. 5) within anti-science, global warming denial filter bubbles, is linked to the disconcerting phenomenon referred to by several theorists as the “death of expertise.” In his influential book *The Death of Expertise: The Campaign Against Established Knowledge and Why It Matters* that has resonated throughout academia, Tom Nichols “lays out the case for why we are turning away from the experts and professionals in our lives” (Pulliam 35). As opposed to trusting the opinions of actual experts who have dedicated much of their lives to exploring climate science, Nichol’s concept demonstrates why “*fake experts* and spokespeople conveying the impression of expertise on a topic while possessing little to no relevant expertise” have been able to polarize public opinion about the ecological crisis (Cook 285). Due to the nefarious effects of proliferation and the problem of confirmation bias, millions of television viewers or internet surfers readily accept “so-called insights or recommendations about a subject from people who lack the qualifications for offering them” on various outlets that incessantly disseminate anti-science, anti-knowledge viewpoints (Lutzke et al. 5). The notion of the death of expertise reveals why “people no longer respect the opinions of experts” in a post-factual world comprised of floating signifiers that stand in for reality if they are repeated or retweeted enough in cyberspace (Yoo 185). For conservative talk show hosts who often express their skepticism about climate change, “[t]he purpose of the fake expert strategy is to cast doubt on the high level of expert agreement on human-caused global warming” (Cook 285). Unfortunately, this hege-

monic technique for altering the perception of reality, or creating an alternative version of it through the force of proliferation, is so pervasive that it has eroded public confidence in how knowledge is objectively and methodically constructed in scientific circles. Instead of relying on true specialists who possess a veritable wealth of erudition, millions of individuals place their faith in political commentators or fake news sources to which they turn for answers that are “consistent with their [. . .] ideologies” (Drummond et al. 3). Furthermore, Nichols notes how “the advent of the Internet has made it easier than ever for every person with access to become their own ‘expert’ in all things” (Pulliam 35). The widespread mentality that Google can solve all of life’s mysteries with a simple mouse click has greatly contributed to the death of expertise and climate change skepticism. From the standpoint of confirmation bias and the illusory truth effect, the issue is that many people lean heavily on purveyors of fake news and conspiracy theories when they are scrolling through (dis-)information on their screen. In the Baudrillardian sense, a ubiquitous code that finds its “origins outside of concrete reality” has supplanted the real in the *simulacral* imagination of a considerable segment of the population (Jordan and Haladyn 253).

The Main Forms of Climate Change Denial and Nefarious Effects of Mimesis

John Cook and Jean-Daniel Collomb identify the most common forms of climate change denial that manifest themselves in hyperreal echo chambers where millions of people are sheltered from reality through the power of simulation. Based on the results of empirical studies, Cook, referring to Rahmstorf, outlines “three main categories of misinformation: trend (global warming isn’t happening), attribution (humans aren’t causing global warming), and impact (climate impacts aren’t serious)” (284). In addition to these misleading, post-truth arguments that echo throughout a self-referential network of signs supporting anti-science perspectives, Collomb observes that “climate denial stems from the strong ideological commitment of small-government conservatives and libertarians to laissez-faire and their strong opposition to regulation [. . .] US climate deniers often rest their case on the defence of the American way of life, defined by high consumption and ever-expanding material prosperity” (20). The “debate” is settled regarding climate change, but the deliberate transmission of a deluge of anti-science *signs* pinpointed by Cook and Collomb represents an effective “strategy of ‘manufacturing uncertainty’ [that] has been used with great success by polluters [. . .] to oppose public health and environmental regulation” (Michaels 149). Given that

there is an “ever-growing consensus within the scientific community that we have entered into a sixth mass extinction” connected to human activities, time is of the essence (Wagler 78). It is the “misperception that there is a lot of disagreement among scientists over whether global warming is happening” that is standing in the way of conceiving and implementing a more sustainable roadmap for the future (Ceccarelli 206). The current *infodemic* or information dystopia that Baudrillard calls “the murder of the real” could soon lead to the demise of all sentient and non-sentient organisms on this planet. While “the ocean’s temperatures are rising” and “the level of biodiversity is being reduced,” millions of people dwell in a symbolic universe where these established scientific facts have been eclipsed by hyperreal simulacra (Prasad 1223).

Alan Logan et al. note that the dominant post-truth metanarratives used to defend global warming skepticism derive much of their strength from our unfortunate biological predilection to imitate the behavior and attitudes of others that René Girard terms *mimesis*. As Logan et al. assert, “It can be argued that many of the Anthropocene’s grand challenges are linked to the human tendency to unconsciously copy and mimic the behavior of others; from an evolutionary perspective this has been an adaptive strategy, and yet imitation in unhealthy behavior and consumption in the modern era has been detrimental at scales of person, place and planet” (15). Girard illustrates in seminal essays such as *Violence and the Sacred* and *The Scapegoat* “the pervasive and primordial role of imitation in human life” (Garrels 47). According to Girard, “the pressure to conform is so powerful that it defies any form of rationality” (Sfetcu 54). Girard’s theories about mimetic desire, which underscore our evolutionary penchant to imitate without reflection for the sake of belonging to a certain social group connected to the process of identity formation, elucidate why climate change deniers embrace fake experts and attack renowned scientists. Although it may seem and is indeed illogical to undermine the reality of global warming, “Human beings are the sorts of beings that are bound to imitate one another” (Romero 2). Girard’s concept of *mimesis* helps us to understand why so many people jump on the proverbial bandwagon in defense of far-fetched conspiracy theories like Trump’s declaration that “climate change was a hoax that China had devised to secure an unfair trade advantage” that should be dismissed automatically (Wong).

Heavily influenced by the work of Girard with whom he taught for many years at Stanford University, Michel Serres decries the illusory truth effect to which Baudrillard alludes in his reflections about the perils of hyperreality. Pondering whether we will soon find ourselves on the brink of the inception of a post-truth society, Serres declares, “From mimicking flows our desires [. . .] We imitate, we reproduce, we repeat [. . .] The major danger facing our children, here it is: we immerse them in a universe of replicated codes, we crush them

with redundancy” (193).³ Baudrillard insists that the postmodern condition is even more dire because of “new forms of virtual mimesis” that bear little (if any) connection to reality (Lawtoo 89). To be more precise, Baudrillard theorizes that late capitalism takes advantage of “forms of mimesis and mimetic rivalry typical of primates” including *Homo sapiens* in order to ensure that the monetary wheels never stop spinning (Grace 12). In an economic landscape in which “all of the basic needs of the masses have been satisfied,” the capitalist paradigm had to evolve if it was to survive (Messier 25).⁴ Baudrillard posits that marketers began to promote unbridled consumption of goods whose symbolic importance far transcends their practical use value by instigating mimetic rivalries compelling “consumer citizens”⁵ to “keep up with the Joneses.” Specifically, Baudrillard points out that the economic system creates artificial models including allegedly subversive subcultures to which consumer citizens are expected to conform by purchasing a wide array of clothing items and accessories corresponding to these hyperreal images generated on a digital screen. Highlighting that these supposed expressions of individuality are void of any real significance, Baudrillard affirms, “so personalization consists in a daily realignment to the smallest marginal difference (SMD)” (*The Consumer Society* 90–91). The philosopher reiterates,

Differences of the ‘personalizing’ type no longer set individuals one against another; these differences are all arrayed hierarchically on an indefinite scale and converge in models [. . .] As a result, to differentiate oneself is precisely to affiliate to a model, to label oneself by reference to an abstract model, to a combinatorial pattern of fashion, and therefore to relinquish any real difference, any singularity, since these can only arise in concrete, conflictual relations with others and the world. (88)

Baudrillard’s theories regarding how the simulators of hyperreality have harnessed the force of mimesis like never before explain why climate change deniers imitate the behavior of others in online echo chambers without a passing thought. Global warming skepticism is fueled by this genetic trait that appears to be hard-wired into the DNA of all primates from an evolutionary angle. No matter how preposterous that anti-science discourse may be in cyberspace, it is effective be-

3 As I highlight in my recent book chapter “*Simulacral Imagination and the Nexus of Power in a Post-Marxist Universe*,” Serres makes a vital distinction between “active” and “passive” mediums that ultimately leads him to different conclusions about the birth of the digital era. This chapter also provides a more comprehensive explanation of how Baudrillard and Serres’s visions regarding the age of information diverge (Moser).

4 This point will be briefly revisited in a later section of the essay.

5 The expressions “consumer citizen” and “purchaser citizen” have been used by numerous researchers since the 1950’s. For instance, see Steigerwald.

cause we are mimetic organisms whose constitution of a stable sense of Self is linked to reactive, unreflective imitation.

The Semiotic Pollution or Disinformation Campaigns of “Big Carbon”

Baudrillard’s explanation about how capitalism had to transform itself given that the limits of production had been reached offers insights into the intentional disinformation campaigns that lie at the heart of climate change denial. In a global financial system dominated by multinational titans that possess nearly all of the capital, “[i]t is important to consider who would benefit from a post-truth era in which science and facts are free for any interpretation” (Lopez and Share 2). Antonio Lopez and Jeff Share provide the following answer to this question: “In their role as watchdog and Fourth Estate, the mainstream and corporate media was manipulated by Big Carbon, whose strategy (honed by the tobacco and chemical industries), was to create doubt about climate science, and hence delay action” (4). Directing blame toward the fossil fuel industry, Jean-Daniel Collomb concurs with the assessment that “the climate change denial movement is part and parcel of this larger corporate effort to hinder regulations” (3). Official documents have surfaced that unequivocally prove that “Exxon was aware of climate change, as early as 1977, 11 years before it became a public issue, according to a recent investigation” (Hall). Additionally, John Cook reveals, “80% of ExxonMobil’s internal documents from 1977 to 1995 acknowledge that climate change was real and human-caused” (284). Worried about protecting their unheralded profits as opposed to transitioning to a green economy, fossil fuel executives would soon change strategies entirely. The petroleum industry would cynically assume the risk that 97% of the world’s eminent scientists were wrong about global warming, thereby becoming the primary source of anti-science rhetoric and disinformation in both traditional and online media. Big Carbon would abandon evidence altogether in an effort to “greenwash reality and deny the science about anthropomorphic climate change” (Lopez and Share 9).

Since regulations related to lobbying are virtually non-existent in the United States, it was easy for the petroleum industry to bribe politicians and other public officials and to sway public opinion with their “campaign contributions.” As Sandra Laville uncovers, “The largest five stock market listed oil and gas companies spend nearly \$200m [. . .] a year lobbying to delay, control or block policies to tackle climate change.” From an environmental, political, and philosophical standpoint, the consequences of this semiotic pollution and corruption have been

catastrophic. It is only because of the calculated efforts of Big Carbon to misinform the masses that any controversy about global warming exists at all. The fossil fuel industry is the main culprit in the transmission of hyperreal signs designed to manufacture uncertainty about a subject for which there has been a consensus for a long time within the scientific community. In his article entitled “Simulacra in the Age of Social Media: Baudrillard as the Prophet of Fake News,” James Morris observes, “The controversy over climate change denial is a case in point. Even when 97 percent of scientists believe that climate change is a real phenomenon, many still refute its human causation [. . .] because believing in climate change would force them to fundamentally alter their way of life, and those companies that rely on this way of life for their income encourage this situation, such as those in the fossil fuel business” (324). It is more convenient and lucrative for oil and gas companies to fabricate their own “alternative facts” than to accept reality. Their dissemination and funding of hyperreal simulacra intended to plant seeds of doubt about global warming is like playing Russian roulette and loading all six chambers.

The investigative journalist Chris McGreal reveals that the petroleum industry decided to alter its approach with the dawn of the digital age. Recognizing that “the simulated highway of internet” is the fastest way to proliferate “counter-evidence” grounded in hyperreality (Nunes 316), “research shows the fossil-fuel industry has moved away from outright denying the climate crisis, and is now using social media to promote oil and gas as part of the solution” (McGreal). Perhaps, the most salient example of this new strategy is the ridiculous notion of “clean coal.” Although “contradictory evidence for domestic resource depletion, poor regional air quality, and global climate change” linked to coal mining is nearly impossible to discredit, big carbon has spent millions of dollars funding conspiracy theories and fake news promoting the idea of clean coal throughout various media outlets in the United States and around the world (Kuchler and Bridge 136). Moreover, students in some regions of the US have been indoctrinated by a book entitled “Natural Gas: Your Invisible Friend” that depicts natural gas “as an ideal, clean way to cook food, power vehicles, and heat and cool buildings” (Kempe). These corporate-funded pamphlets fail to mention that “burning natural gas emits greenhouse gases and contributes to climate change” (Kempe). It is in this same sense in which recent debates about fracking should be understood. Regardless of the dirty energy source in question that only serves to exacerbate the ecological crisis, fossil fuel companies realize that many routes along the information superhighway are sold to the highest bidder. After decades of trying to bury the findings of climate scientists, big carbon has once again started to admit that climate change is real. However, their “alternative facts” present the petroleum industry as the solution instead of the problem.

The Problem of Media Consolidation and The Rise of the Corporate Establishment Media

The hyperreal fallacy of eco-friendly fossil fuel technology is part of the larger issue of media consolidation and the rise of the corporate establishment media. When the Federal Communications Commission (FCC) relaxed their ownership rules, a handful of transnational corporations would begin to take over the mainstream media apparatus. The six multinational entities (General Electric, News-Corp, Disney, Viacom, Time Warner, CBS) that now control approximately ninety percent of the news channels that Americans watch have a vested interest in maintaining the status quo from which they have derived unparalleled profits (Lutz). The former host of the *Daily Show* Jon Stewart would often satirize American news outlets across the country for literally repeating the same lines verbatim from a carefully prepared script. This fundamental shift in the media landscape has significantly eroded the quality of coverage resulting in journalists on national and local networks being presented “[w]ith a script, a screenplay, that has to be followed unswervingly” (Baudrillard, *The Intelligence of Evil* 125). For Baudrillard, this extreme redundancy connected to the illusory truth effect is “merely the visible allegory of the cinematic form that has taken over everything—social and political life, the landscape, war, etc.” (125). Baudrillard argues that those at the top of the social ladder have taken advantage of simulated reality to brainwash the masses and to conceal unprecedented economic disparities in the neoliberal age. The six aforementioned corporations that possess a stranglehold over the means of transmitting (dis-)information to the public cannot possibly play the role of a benevolent fourth estate or a watchdog because they have to answer to their shareholders and board of directors driven by the profit motive. From an ecological standpoint, research about global warming that conflicts with their purely economic interests must be minimized or challenged. The so-called “life-blood of American democracy” has been corrupted by the integrated political and social elite through semiotic pollution (Wellstone 552).

The corporate hijacking of the US media also “set into motion an increasing polarization of news” (West and Bergstrom 4). In particular, it enabled “the conservative movement and especially its think tanks (to) play a critical role in denying the reality and significance of global warming [. . .] by manufacturing uncertainty over climate science” (Dunlap and Jacques 699). In the United States and Australia, Rupert “Murdoch gets away with pretty much everything,” despite the “intellectual corruption at the heart of the Murdoch empire” (Alterman 11). The news organizations “owned by billionaire Rupert Murdoch in Australia and the United States [. . .] give disproportionate oxygen to deniers” (Robie 22). The man-

ner in which anthropogenic climate change is framed on Fox News and News Corp is so egregiously distorted that “James Murdoch and his wife, Kathryn, issued a rare joint statement directly criticizing his father’s business for their ‘ongoing denial’ on the issue” (Waterson). Armed with billions of dollars and a sophisticated means of shaping public opinion, venture capitalists like Murdoch have succeeded in creating “doubt where it is unmerited” by validating the previously mentioned corporate propaganda (West and Bergstrom 4).

In addition to its misguided decision that facilitated the corporate takeover of the mainstream media, the FCC’s fairness doctrine originally enacted in 1949 would be weaponized and misused by corporate titans to whitewash reality for “their own ideological objectives” (Prasad 1218). The concept of “balanced” coverage representing all sides of a debate may sound good in theory, but it is “critical to discern what constitutes neutrality” (Jones et al. 65). The problem with balanced reporting, as it is commonly misunderstood, is that this principle implores journalists to give equal weight to opposing viewpoints even when all of the evidence is squarely on one side. The “conventional journalistic practice of being ‘fair and balanced’ by allowing different sides of the climate discussion equal time” has created the misperception that scientists are divided about the reality and gravity of the ecological crisis (Lopez and Share 4). Within anti-science echo chambers, “the prevailing norm of balanced reporting has resulted in uncertainty among members of the public about the factuality of anthropogenic climate change” (Prasad 1225). Conservative networks that traffic in climate change denial like Fox News while pretending to be “fair and balanced” are indicative of the “alt-right fervor of fake news and alternative facts (that) has brought into focus the so-called post-truth era” (Kirkpatrick 312). The idea of balanced reporting is an appealing concept, but it has been misappropriated by the simulators of hyperreality as a hegemonic tool for fabricating a post-factual filter bubble that has rendered “any and all truth claims” to be equally valid (Prasad 1228). This journalistic standard has obfuscated the reality that there may be two sides to every story, yet only one of them may be legitimate based on evidence.

Another unintended consequence of turning over the reins of the media to transnational conglomerates is that having solid ratings is paramount for all journalists. Competitive ratings generate a solid revenue stream for corporate media outlets. The issue is that many individuals have a stronger desire to be entertained than to be informed about the actual state of affairs. Citing Neil Postman’s book *Amusing Ourselves to Death: Public Discourse in the Age of Show Business*, Alan Logan et al. note that this “increasing need to be amused in all critical aspects of social discourse, political, academic and otherwise” has led to an “emerging apathy for truth” (6). It is no surprise that the multinational giants who own the media would readily give in to this demand, since they are incessantly explor-

ing ways to increase their profit margins, even at the expense of the truth. For this reason, the entertainment value of television anchors and talk show hosts is much more important than the veracity of the truth claims that they make on air. Compared to sensational stories about celebrities that have proven to be lucrative for all major news channels, “climate change is a ‘ratings killer’” that does not line the pockets of corporate CEOs (Lopez and Share 5). Consequently, even when the establishment media acknowledges the severity of the ecological crisis, segments devoted to climate change are often too short and superficial.

The Advent of Late Capitalism and the Incessant Promotion of Consumerist Metanarratives

As scholars like Ernest Mandel and Fredric James theorize in their analyses of the origins of late capitalism, the new media landscape dominated by six multinational corporations in the US is also complicit in “legitimizing dubious ‘truth’ claims” that serve to promulgate consumerist metanarratives (Berthon et al. 144). The corporations that control the major news outlets, which are a byproduct of the aforementioned dramatic paradigm shift in the capitalist system, could be described as the greatest cheerleaders of neoliberal globalization. Stories about climate change are usually inadequate at best, because most journalists promote materialistic messages that encourage frivolous consumption and waste upon which the financial system depends for survival that are destroying the planet. When the limits of production had been effectively reached in Western civilization, an economic system centered around the idea of continual growth and expansion shifted to a throwaway society in which marketers and journalists would endlessly peddle signs of happiness through consumer goods laden with purely symbolic value to stimulate the economy and allegedly maximize contentment for all citizens. In reference to the crisis of late capitalism that forced the financial model to evolve or disappear, Adele Flood and Anne Bamford underscore, “Needs are created by objects of consumption and exist because the system needs them” (92). Hence, marketers and journalists spin the simplistic, binary logic that an increase in GDP is always positive and vice versa in order to fulfill these manufactured “needs” linked to ecocidal overconsumption.

Baudrillard explains in *The Consumer Society* that companies are always scrambling “to keep pace with the explosive growth of ‘needs,’” since the system in its current shape would collapse if the wheels were to stop turning momentarily for any reason (2). Baudrillard maintains that our understanding of capitalism “thus needs to be revised in light of a much more general social logic in which

waste, far from being an irrational residue, takes on a positive function, taking over where rational utility leaves off to play its part in a higher social functionality—a social logic in which waste even appears ultimately as the essential function” (43). This new stage of capitalism announced by Baudrillard representing a post-Marxist perspective sheds light on how “marketers became proponents and propagators of a postmodern world view, one in which reality gives way to hyper-reality” (Berthon et al. 144). Baudrillard’s theories also reveal why a key cog in the neoliberal machine (i.e. the establishment media) continues to disseminate the consumerist metanarrative that all growth is positive, even forms of development that are depleting the earth’s limited “resources,” thereby placing the existence of all sentient and non-sentient beings in jeopardy. The transnational entities that own the information superhighway cannot be a watchdog for consumers or the biosphere, for they are part of “a system which is contingent upon the domination of human and natural life” (Hardwick 372). The unsustainable concept of unending growth and “progress” is a type of violence that has been unleashed against the remainder of the cosmos.

The ecolinguist Arran Stubbe identifies this post-factual myth as one of the deadliest stories-we-live by, or “stories in the minds of multiple individuals across a culture” in *Ecolinguistics: Language, Ecology and the Stories We Live By* (6). Inspired by postmodern insights, ecolinguists deconstruct “discourses such as those of economic growth, consumerism and neoliberalism that are at the core of an unsustainable society” (Alexander and Stubbe 107). Although the reductionistic neoliberal view of growth is more like an overt declaration of war against the hand that feeds to paraphrase Michel Serres, “in Western society, the words ‘growth’ and ‘progress’ have inherently positive connotations” (Alexander and Stubbe 108). Refusing to acknowledge the scientific consensus that our “endless pursuit of economic growth is destroying the planet” and our “obsession with GDP is driving the climate crisis,” most mainstream journalists repeat from the same script that is uniquely focused on the monetary measure of Gross Domestic Product (Steward). Degrowth viewpoints that are more ecologically sound are entirely absent from the conversation, since they are at odds with the corporate agenda of the establishment media.

Luis Pradanos notes that the viability of the financial paradigm itself is rarely called into question in our corporate-driven news world. As Pradanos outlines, “We are immersed in a socially and environmentally unsustainable globalizing system that promotes a teleological conception of progress based on relentless competition, capital accumulation, over-consumption, energy depletion, and debt-driven economic growth. Neoliberal globalization generates and exacerbates the present ecological crisis” (153). The visible scars of the neoliberal “world war” in the Serresian sense are all around us, yet the faulty logic of unchecked growth is

still being transmitted to the masses. There is virtually no dialogue about the concept of “degrowth” as a powerful discursive tool to facilitate the emergence of new social imaginaries and creating new socio-economic models that will provide beneficial ecological consequences for living in the Anthropocene” on corporate news outlets (Reichel and Perey 242). In the face of evidence suggesting that neo-liberalism and rampant consumerism are the problem, journalists on corporate networks laud the virtues of consumption and celebrate increases in GDP that are wreaking havoc on the planet.

Counter-Hegemonic Techniques for Resisting the “Murder of Reality”

Owing to the effects of corporate media saturation and the ubiquity of consumerist metanarratives, Baudrillard nihilistically proclaims that resistance is pointless with the emergence of *integral reality*. According to Baudrillard, the hyperreal realm in which the postmodern subject now resides is so “extreme in the absence of critical distance it grants us” (*The Intelligence of Evil* 8) that “any form of resistance is readily incorporated and assimilated back into the code” (Norris). Depicting a tragic “world from which all reference has disappeared” (Coulter 3), the philosopher avers, “We should entertain no illusions about the effectiveness of any kind of rational intervention” (Baudrillard, *The Transparency of Evil* 119–120). Given that concrete action is urgently required in the Anthropocene, “[t]he greatest difficulty with Baudrillard’s analysis is that he does not propose a way out of the condition of hyperreality” (Mannathukkaren 428). For a frustrated climate scientist or an environmental activist, Baudrillard’s radical semiurgy initially appears to lead to a dangerous impasse. If “the murder of reality is a crime that alas cannot be solved [. . .] precisely because all ‘critical distance’ [. . .] has vanished into the play of signs,” there seems to be no hope for avoiding the apocalyptic doomsday scenarios outlined by the scientific community (Smith 79).

Nevertheless, if we reject the strict version of *integral reality*, Baudrillard’s framework for deconstructing banal, commercial simulacra represents a point of departure for conceiving counter-hegemonic techniques connected to the erosion of reality in anti-science echo chambers. The budding field of inoculation theory in psychology demonstrates that people of all ages, especially young students, can be taught to identify and dismiss the “alternative facts” that Baudrillard denounces. As John Cook summarizes, “one approach showing a great deal of potential in countering misinformation comes from inoculation theory: a branch of psychological research that adopts the vaccination metaphor—just as biological vaccina-

tion neutralizes viruses by exposing people to a weak form of the virus, misinformation can be neutralized by exposing people to a weak form of misinformation” (288). Furthermore, Cook pinpoints several empirical studies which support the theory that individuals can be taught to recognize fake news stories about climate change through attitudinal inoculation. These findings were replicated by Matt Williams and Christina Bond who “found that providing information about the scientific consensus on climate change increased perceptions of scientific consensus, as did an inoculation provided prior to provision of misinformation” (1). Instead of succumbing to despair or apathy, “this growing body of research” implies that “scientists (should) communicate the consensus in order to close the consensus gap” (Cook 285). Without painting too rosy a picture of the serious *infodemic*, these studies undermine the extreme view of *integral reality* by offering proof that a rather large segment of the population can be at least partially vaccinated against fake news and anti-science rhetoric.

Media literacy training in elementary schools also demystifies Baudrillard’s pessimistic position that “there is no critical distance from which to oppose” the takeover of the real in online filter bubbles (Nechvatal). Similar to the field work conducted by psychologists, educational theorists have discovered that pre-exposure to misinformation, or what is often referred to as “prebunking,” can “trigger a cognitive process that generates counterarguments to disinformation like a form of ‘cognitive antibodies’” (“Fact or Fake”). Baudrillard was correct to have sounded the alarm, but the perfect crime has not yet been actualized since “prebunking still has value” (Witze 26). Although it may seem like an uphill battle against the sea of simulacra that have hollowed out our ability to distinguish between reality and its representation, research from the classroom proves that “echo chambers may be disrupted through critical media literacy training” (Melki et al. 2). Based on the core principle of prebunking, many public-school science teachers have started to create misconception-based lessons in which “misconceptions are first activated then immediately countered with accurate information or inoculating refutations” (Cook 289). For educators who employ this approach, their students have “improved argumentative and critical thinking skills” in the digital age (289). Despite Baudrillard’s stance that it is no longer possible to perform “an act that punches a hole in our artificially protected universe,” the concept of prebunking and the application of misconception-based learning illustrate that our ability to engage in critical reflection has not been effaced entirely by the simulators of hyperreality (*The Transparency of Evil* 95).

Not only do schools have a pivotal role to play in the fight against fake news, but research also highlights the responsibility of museums to debunk climate change denial. Since many “visitors trust museums to provide objective and accurate information on climate change” (Jones et al. 68), museums are “cultural

brokers in collaborative efforts around public understandings of climate change” (Salazar 123). In an attempt to close the consensus gap, or to inform visitors that a consensus has been reached within scientific circles, several museums have discovered that “exhibitions and programs can increase climate literacy and call people to action” (Sutton 618). Even if trust in museums “is conditional” (Jones et al. 68), “the purpose of museums more broadly is ripe for reimagining in the era of climate change” (Sterling and Harrison). As long as they do not fall into the trap of being too didactic or politicizing the climate “debate,” findings from recent studies strengthen the argument that museums can become counter-hegemonic spaces where anti-science discourse is weakened. After visitors have been inoculated against fake news perspectives, they possess the necessary tools for “constructive climate change engagement” (McGhie et al. 183).

Another counter-hegemonic strategy for combating climate change denial is to find new angles that appeal to conservatives. Even though the conservative movement in the United States and abroad is not a monolithic coalition, climate change skepticism is usually associated with the right or alt-right. As opposed to viewing voters on the conservative end of the spectrum as a lost cause, several researchers have urged scientists and other stakeholders to reach out to individuals on the right using slightly different tactics. Specifically, numerous studies indicate that “reframing climate messages using moral values that are valued by conservatives (e.g. purity) has been shown to neutralize ideological influence” (Cook 291). Antonio Lopez and Jeff Share explain that “national and regional coverage can focus on food security (production and safety), health, immigration and sports (i.e. it’s too hot to play baseball in the summer)” instead of the usual framing (6). When climate change has been (re-)contextualized as a matter of national security and protecting the American way of life, the above studies have found that conservatives are more amenable to having discussions about the ecological crisis. Moreover, climate change could also be effectively presented as an economic problem that costs taxpayers billions of dollars every year in an effort to sway fiscally conservative voters. Many governments have already been forced to implement “strategies to minimize the socioeconomic impacts on climate change refugees” who have been displaced by rising sea levels, desertification, soil erosion, and natural disasters that are increasing in intensity and frequency (Yusuf 1).

Conclusion

In conclusion, Baudrillard's highly original theories shed light on how climate change denial has proliferated itself in cyberspace through the illusory truth effect. When online users are only exposed to viewpoints that confirm their preexisting biases on their digital screens, there is not *enough* resistance to fake news about climate change or any other issue. For all intents and purposes, millions of people around the world live in their own alternate (hyper-)reality. As Baudrillard meticulously outlines from 1968 to his death in 2007, simulated reality sometimes appears to be on the verge of eclipsing the real entirely. This troubling and potentially *ecocidal* phenomenon linked to late capitalism, media consolidation, and the creation of the corporate establishment media and its "fairness doctrine" that has served to legitimize all truth claims is the nexus of climate change (dis-)information. The corporate titans including fossil fuel executives that control the (dis-)information superhighway that has spellbound the masses are undeniably powerful. Nonetheless, compelling evidence suggests that certain counter-hegemonic devices can be utilized to tear a hole in the pervasive fabric of the hyperreal before *integral reality* sets in completely and the planet that we call home is irreparably annihilated. Unless we are able to inoculate a much larger percentage of the populace against deleterious post-truth metanarratives that question the reality of climate change, our swan song may be on the horizon.

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