





**MOSF *Journal of Science Fiction***

Volume 4, Number 1

31 July 2020

ISSN 2474-0837

**Managing Editor:**

Aisha Matthews, M.A.

**Editors:**

Anthony Dwayne Boynton, M.A.; Barbara Jasny, Ph.D.;  
Benet Pera, Ph.D.; Doug Dluzen, Ph.D.; & Melanie Marotta, Ph.D.

**Editorial Board:**

Nancy Kress, M.A., M.S.; Charles E. Gannon, Ph.D.; Patrick Thaddeus  
Jackson, Ph.D.; Terence McSweeney, Ph.D.; & Marleen S. Barr, Ph.D.

**Cover Art:**

*A Blessing* by Rosana Azar

**Reflections:**

Beyond Dystopia: Joy, Hope, & Queer Ecology in Sam J. Miller's *Blackfish City*  
By Christy Tidwell, Ph.D.

Reading Jeff Vandermeer's *Annihilation* in the Anthropocene  
By Jim Coby, Ph.D.

Scenting Community: Microbial Symbionts in Octavia Butler's *Fledgling*  
By Melody Jue, Ph.D.

The Ecologies of Postwar Hard Science Fiction and Where to Find Them  
By Veronika Kratz

Mortal Critters Join Forces: Living in a Kaiju Film  
By Bridgitte Barclay, Ph.D.

**Articles:**

Monolithic, Invisible Walls: The Horror of Borders in Jeff VanderMeer's  
*Southern Reach Trilogy*  
By Pearson Bolt

No Windup: Paolo Bacigalupi's Novel Bodily Economies of the Anthropocene  
By Jonathan Hay



**Articles (cont.):**

Humans as Ecological Actors in Post-Apocalyptic Literature

By Octavia Cade, Ph.D. & Meryl Stenhouse, Ph.D.

The Cost of Production: Animal Welfare and the Post-Industrial Slaughterhouse in

Margaret Atwood's *Oryx and Crake*

By Stephanie Lance, Ph.D.

The Mutant Land: How the Island Krakoa Dictates the Mutant Society in

*House of X*

By Brett Butler, Ph.D.

**Book Reviews:**

Tidwell, C. and Barclay, B. (Eds.) (2018). *Gender and Environment in Science Fiction*

By Sarah Powell Price, M.Sc., M.S.

Canavan, G. and Stanley Robinson, K. (Eds.) (2014). *Green Planets*

*Ecology and Science Fiction*

By Zaida Ortega, Ph.D.

Russel, C. (2016). *Fragment*

By Elizabeth Diago-Navarro, Ph.D.

**Additional Artwork:**

*Infinite Search* by Rosana Azar

*Background* by Julia Slocomb Dluzen

Sponsored by the Museum of Science Fiction  
& hosted by the University of Maryland Libraries.

Museum of Science Fiction  
PO Box 88  
Alexandria, VA 22313

University of Maryland Libraries  
7649 Library Lane  
College Park, MD 20742



### **Open Access Policy**

This journal provides immediate open access to its content in keeping with the principle that making research freely available to the public supports a greater global exchange of knowledge.



## Table of Contents

Masthead.....	2
Table of Contents.....	5
<b>Cover Art</b> by Rosana Azar.....	7
<b>Letter from the Editor</b> by Aisha Matthews .....	8
<b>Foreword to the Special Issue on Environmental Science Fiction</b> by Gerry Canavan, Ph.D.....	10
<b>Reflective Essays:</b>	
Beyond Dystopia: Joy, Hope, & Queer Ecology in Sam J. Miller’s <i>Blackfish City</i> by Christy Tidwell, Ph.D. ....	12
Reading Jeff VanderMeer’s <i>Annihilation</i> in the Anthropocene by Jim Coby, Ph.D.....	15
Scenting Community: Microbial Symbionts in Octavia Butler’s <i>Fledgling</i> by Melody Jue, Ph.D. ....	17
The Ecologies of Postwar Hard Science Fiction and Where to Find Them by Veronika Kratz .....	20
Mortal Critters Join Forces: Living in a Kaiju Film by Bridgitte Barclay, Ph.D. ....	22
<b>Artwork:</b> “Infinite Search” by Rosana Azar .....	24
<b>Articles:</b>	
Monolithic, Invisible Walls: The Horror of Borders in Jeff VanderMeer’s <i>Southern Reach</i> Trilogy by Pearson Bolt, Ph.D. ....	25
No Windup: Paolo Bacigalupi’s Novel <i>Bodily Economies of the Anthropocene</i> by Jonathan Hay .....	34



**Table of Contents (cont...)**

**Articles (cont...)**

Humans as Ecological Actors in Post-Apocalyptic Literature  
by Octavia Cade, Ph.D. & Meryl Stenhouse, Ph.D .....47

The Cost of Production: Animal Welfare and the Post-Industrial Slaughterhouse  
in Margaret Atwood’s *Oryx and Crake*  
By Stephanie Lance, Ph.D. ....60

The Mutant Land: How the Island of Krakoa Dictates the Mutant Society in *House of X*  
by Brett Butler, Ph.D. ....75

**Artwork**

“Background”  
by Julia Slocomb Dluzen, Ph.D. ....86

**Books in Review:**

by Sally Powell Price, Zaida Ortega, Ph.D., and Elizabeth Diago-Navarro, Ph.D. ....87

**Press Release/Announcement for Escape Velocity Extra (EV), 8/26** .....93

**About the Contributors**.....95

Cover Art



Cover Art: *A Blessing* by Rosana Azar



## Letter from the Editor

In the midst of our current moment of ecological and environmental crisis, the current state of the global COVID-19 pandemic has only served to intensify the urgency with which we look towards our public institutions—chiefly, our government—for answers about where to turn, what to expect, and what to do next. Unfortunately, for those of us in the United States as well as many other places around the globe, the “official” response has fallen monumentally short of our needs and expectations. While television and print news sources have, in many cases, largely contributed to the chaos in this “post-truth” era, not all media threatens to catapult us into deeper panic. While some more moderate voices prevail in mainstream reporting, times such as these drive us towards our cultural repository of human experience—literature, film, and other modes of media that capture our humanity and reflect it for examination. Ironically, despite its many dire warnings by way of ecological and sociopolitical apocalypse, science fiction has consistently served as a serious, if cognitively estranging medium for frank discussions of the challenges at stake in the face of ecological devastation and social disarray.

Science fiction—and more broadly, speculative fiction—provides a medium for discussion of the ethics of technology and neoliberal capitalism, offers insight into alternative social formations and institutional possibilities, and echoes ominous warnings about the possible consequences of our current actions if left unchecked. Perhaps this is why science and speculative fiction, in their myriad configurations, so effectively reflect the imminent harm inherent to our current way of being, not just for human beings, but for all life on our planet.

A rich vein of literature and scholarship dating back to the pulp era of science fiction has echoed the growing fields of ecology and environmental studies, looking at society’s unsustainable capitalist practices and their inevitable impact on the earth and all of its creatures. This special issue of the MOSF Journal of Science Fiction stages an intervention at this critical moment, contributing to the field of environmental studies with a volume of critical articles, reflections essay, and book reviews on works and topics in environmental science

fiction. The essays in this issue include scholarly discussions of Jeff VanderMeer’s *Southern Reach Trilogy*, Margaret Atwood’s *Oryx & Crake*, and Paolo Bacigalupi’s *The Windup Girl*, amongst many other works of environmental science fiction from the last seventy years, both popular and obscure. Some take a look humanity’s role in ecological action, while others explore representations of animal and plant life that foreground non-anthropogenic cosmologies. Still others underscore the symbiotic relationship between (post)humankind and the environments in which they live, struggle, and survive.

In that vein, I also point you to the contributions of some of the top scholars in the field, including a Foreword offered by Dr. Gerry Canavan, and reflections by Dr. Christy Tidwell, Dr. Bridgitte Barclay, and Dr. Melody Jue, amongst the many other insightful voices featured in this issue.

Our current environmental moment is a dire one, to put things as lightly as possible. Even as I write this, wildfires are burning across Colorado and California, residents of the American Southeast and Midwest are recovering from the devastation of powerful tropical storms, and one of the hottest summers on record rages on across the U.S., compounding the current public health crisis which has already had disproportionately negative and severe effects on marginalized communities of color. As environmental concerns merge with discourses of race and privilege, it is not surprising that the mainstream resurgence of the Black Lives Matter movement has coalesced with the rise of a global pandemic.

Amongst many other things, science fiction demonstrates for us the ways that ecological and sociopolitical systems are—often begrudgingly—intertwined, reminding us that a society at war with its environment is inevitably a society at war with itself. Only by taking the warnings of authors, scholars, and scientists like those contained herein (and participating in this conversation through various mediums across the global stage) can we hope to piv-



## **Letter from the Editor (cont...)**

ot towards a world where sustainability truly becomes synonymous with progress, and where we may still hope to turn the tide in favor of the environment—and the future.

- Aisha Matthews Walker

Managing Editor, MOSF *Journal of Science Fiction*

## Foreword to the Special Issue on Environmental Science Fiction

By **Gerry Canavan**, Marquette University

This issue arrives in the midst of a moment of apocalyptic imagining, if not, perhaps, the version of the apocalypse we thought we were expecting. Seen by many as a kind of “dry run” for the sorts of system-wide economic shocks that will become more and more common as climate change intensifies—a test that our leaders have plainly failed—the COVID-19 pandemic has revealed the fragility, insufficiency, and sheer ineptitude of nearly all of our political and social institutions in an era of massive social crisis. Coronavirus has likewise unveiled much about the way that precarity is unevenly distributed along the lines of race, gender, class, age, and (dis)ability, and made visible the shocking incapacity for imagination of a political elite that would, apparently, prefer to send hundreds of thousands to their deaths, and catapult the world into a prolonged economic depression, than consider even the most provisional and temporary change to the way that global capitalism hoards its wealth. It seems little wonder, then, that outside the halls of entrenched power, this moment has also become one of radical political possibility, with massive (and massively popular) Black Lives Matter protests continuing to spread both across the United States and around the globe. In the United States and Europe, coronavirus has awakened a great many in what used to be the political center to the final inadequacy of capitalism—and to new recognition of the weird, new, and utterly post-normal world that global capital itself has wrought. We need to think differently; our lives now depend on it.

Some have thought of COVID-19 as a kind of “bonus” catastrophe—a crisis that we didn’t see coming, and which does nothing to halt the terrifying onrush of climate change. In a sense, this is true. But, as the bracing end of *Contagion* (dir. Steven Soderbergh, 2011)—viewed by so many people during the pandemic that it returned to the top ten on iTunes nine years after its initial release—reminds us, a pandemic is an ecological crisis, too. In

*Contagion*’s final moments, the origins of its fictional MEV-1 pandemic are traced (in a story unknown by any of the film’s characters) first, to a moment of natural-habitat destruction that displaces a colony of bats; second, to unsanitary industrial agricultural conditions that allow the bat to infect a team of hogs awaiting slaughter; and finally, to a Hong Kong casino where it infects its Patient Zero, Beth Emhoff (Gwyneth Paltrow), an executive from an American multinational conglomerate visiting China on business. Many people misread the ending as a moralistic comment on the Paltrow character’s adultery, but that is a complete red herring in the actual progression of the disease. MEV-1, like coronavirus, like the Spanish flu of 1918, like the Black Plague, became a global pandemic not because of divine punishment or diabolic bad luck or immutable natural law, but because human institutions created the conditions for its spread and prevented its timely suppression. And the very same forces of ideology, repression, denial, and control that have failed us so catastrophically in the COVID-19 crisis have been failing us with regards to the environment for fifty years, too.

This special issue of *The MOSF Journal of Science Fiction* refuses any such shuttering of the political imagination. In pieces that discuss topics ranging from the breakdown of human territoriality in Jeff Vandermeer’s *Southern Reach* trilogy to animal cruelty in Margaret Atwood’s *Oryx and Crake* to the X-Men’s founding of a radically post-capitalist mutant utopia on the sentient island of Krakoa in the recent *House of X* arc (2019)—not to mention articles and reflections on Octavia E. Butler’s *Fledgling*, Paolo Bacigalupi’s *The Windup Girl*, Sam J. Miller’s *Blackfish City*, and a host of others—the writers for this issue articulate revolutionary critiques of the existing relations between people, capital, animals, and nature that are intensely urgent for the moment of the Anthropocene. Through these interventions, we can see clearly how neither science fiction nor



**Foreword to the Special Issue of Environmental Science Fiction, continued**

science fiction studies can remain silent in this moment of global omnicrisis—and how the genre still shows us, both through its grimmest apocalyptic imaginings and its loftiest utopian dreams, the glimmers and splinters of futures that might yet be better than the bad one our rulers have chosen for us.

## Reflections

### Beyond Dystopia: Joy, Hope, & Queer Ecology in Sam J. Miller's *Blackfish City*

Christy Tidwell, Ph.D., South Dakota School of Mines & Technology

Science fiction often turns to dystopia and apocalypse to address environmental destruction and climate change. We imagine flooded worlds—J. G. Ballard's *The Drowned World* and *Waterworld* (1995)—and worlds without water—Ballard's *The Drought* and Paolo Bacigalupi's *The Water Knife*. We imagine worlds full of trash—*WALL-E* (2008) and Chen Qiufan's *The Waste Tide*—and worlds without food—*Soylent Green* (1973). We imagine the destructive forces of climate change—*The Day After Tomorrow* (2004), *Snowpiercer* (2013), Margaret Atwood's MaddAddam trilogy. These narratives provide clear warnings, but Saffron O'Neill and Sophie Nicolson-Cole find that although fear-inducing climate change stories might get attention, they “are also likely to distance or disengage individuals from climate change” (O'Neill & Nicolson-Cole, 2009, p. 375). Similarly, Matthew Schneider-Mayerson indicates that the negative emotions generated by frightening environmental narratives can lead to helplessness rather than action (Schneider-Mayerson, 2018). After all, despite decades of seeing these fears played out in fiction and film, we have done nothing to slow our movement into these very futures.

Some recent environmental SF, however, including Sam J. Miller's *Blackfish City*, imagines not just environmental loss and destruction but also survival in the face of frightening environmental change. (Charlie Jane Anders' *The City in the Middle of the Night* does similar work, and I highly recommend it, but space does not permit me to discuss both.) *Blackfish City* is set on a floating Arctic city marked by severe class stratification and shaped by massive climate change that has led to the downfall of the U.S. This is clearly dystopian, but the inevitability of this future is challenged when an orcamancer (a woman nanobonded to an orca) arrives, both prompting significant resistance to the capitalist status quo and

creating the possibility of a more hopeful and equitable future.

Miller simultaneously challenges environmental SF's pessimistic tendencies and provides a model for queer ecology in SF. Catriona Sandilands defines queer ecology as including “practices that aim [...] to disrupt prevailing heterosexist discursive and institutional articulations of sexuality and nature” and rethink “environmental politics in light of queer theory” (Sandilands, 2016, p. 169). *Blackfish City's* environmental politics are inextricable from its queerness, indicating that a future in which the planet has a chance must also be a future that welcomes queer people and is built upon queer relations. Nicole Seymour notes, however, that queer ecology has often lost “queer theory's trademark sensibilities: its playfulness, its irreverence, its interest in perversity, and its delight in irony” (Seymour, 2018, p. 23). She argues that queer ecology should reject feelings such as “gloom and doom, [...] as well as the heteronormativity and whiteness of the [mainstream environmental] movement” (Seymour, 2018, pp. 4-5), and asks, “*might reclaiming gaiety and other contrarian modes enable us to create new modes of resistance, new forms of community, and new opportunities for inquiry into environmental crisis?*” (Seymour, 2018, p. 24, italics in original).

*Blackfish City* presents an affirmative answer to this question, partly because, despite the environmental crisis at its heart, it is a fun read. One central character is an orcamancer (the detail that drew me in initially), some characters are entertainingly snarky, and the city itself—although marked by poverty, class and culture divisions, sickness, and violence—is bustling and lively, a place that the characters clearly love even while they are critical of it. The novel is able therefore to “reclaim gaiety” as part of its damaged but not broken world.

**Beyond Dystopia, continued**

Of course, “gaiety” signifies both joy and queer-ness, and *Blackfish City* is not only fun but inclusive. *Blackfish City* features a lesbian couple, gay men (more than one of whom has the breaks, a clear analogue to AIDS), and a nonbinary person. Perhaps more importantly, the novel treats them as a regular part of the world, and these characters’ identities are normalized without being erased. This is not a story primarily about LGBTQ identity, then, but one featuring people with a variety of identities and desires. *Blackfish City* does not posit queer identities as merely problematic nor does it rely on queer saviors. It’s not that only LGBTQ people could change the world but that the openness that makes room for them spills over into an openness to alternative ways of being and thinking in other arenas as well—including challenges to capitalism and colonialism.

The queerness embedded in the novel also involves engaging deeply with nonhuman beings. Nanobonding, which irrevocably ties a human to an animal, is central to *Blackfish City*. This process creates deep and meaningful cross-species relationships, but it is also dangerous—especially if the connection is disrupted. For instance, one of the main characters was nanobonded to a polar bear as a child and then separated from his animal, which caused him psychological pain for years. Without knowing of this past, he thinks of himself as an animal: “He was amphibious. He was a polar bear” (Miller, 2018, p. 21). He carries the strength and power of the polar bear in his sense of self, but he is not able to understand this or feel whole. In the end, the bonds between human and nonhuman are crucial to revolution within the city itself and to finding a way to fix what has been broken in the larger world and environment. The novel tells a story of hope in a damaged world, and this story cannot be told without the embrace of queer relationships, both human and more-than-human, demonstrating that “certain queer affects and sensibilities [...] are not just *compatible* with politics but *inseparable* from them” (Seymour, 2018, p. 123).

Miller’s novel indicates that environmental SF can be more than dystopian but must still acknowledge the dangers we face going forward. Allyse Knox-Russell describes “*a futurity without optimism*—that is, a futurity cleared of fantasies projected from the (patriarchal, anthropocentric) past and thus a futurity radically open to difference and change” (Knox-Russell, 2018, p. 218, italics in original). The hopefulness of *Blackfish City* is located in this kind of futurity, which functions by rejecting heteronormativity and anthropocentrism and creating a space open to both queerness and reciprocal relationships with the more-than-human world. This openness also makes room for a more joyful encounter with environmental SF itself. There is a lot to be afraid of, but—as both Miller and queer environmental futures more broadly indicate—there’s also a lot to live for.

**References**

- Anders, C. J. (2019). *The City in the Middle of the Night*. Tor Books.
- Emmerich, R. (Director). (2004). *The Day After Tomorrow*. [Film]. 20th Century Fox.
- Fleischer, R. (Director). (1973). *Soylent Green*. [Film]. Metro-Goldwyn-Mayer.
- Joon-ho, B. (Director). (2013). *Snowpiercer*. [Film]. CJ Entertainment.
- Knox-Russell, A. (2018). Futurity without Optimism: Detaching from Anthropocentrism and Grieving Our Fathers in Beasts of the Southern Wild. In K. Bladow & J. Ladino (Eds.), *Affective Ecocriticism: Emotion, Embodiment, Environment* (pp. 213-232). University of Nebraska Press.
- Miller, S. J. (2018). *Blackfish City*. Ecco.
- O’Neill, S. & Nicholson-Cole, S. (2009). “Fear Won’t Do It”: Promoting Positive Engagement With Climate Change Through Visual and Iconic Representations. *Science Communication*, 30(3), pp. 355-79.
- Reynolds, K. (Director). (1995). *Waterworld*. [Film]. Universal Pictures.



**Beyond Dystopia, continued**

- Sandilands, C. (2016). Queer Ecology. In J. Adamson, W. A. Gleason, & D. M. Pellow (Eds.), *Keywords for Environmental Studies* (pp. 169-171). NYU Press.
- Schneider-Mayerson, M. (2018). The Influence of Climate Fiction: An Empirical Survey of Readers. *Environmental Humanities*, 10(2), pp. 473-500.
- Seymour, N. (2018). *Bad Environmentalism: Irony and Irreverence in the Ecological Age*. University of Minnesota Press.
- Stanton, A. (Director). (2008). *WALL-E*. [Film]. Walt Disney Studios Motion Pictures.

## Reading Jeff VanderMeer's *Annihilation* in the Anthropocene

Jim Coby, Ph.D., Indiana University Kokomo

In his ominously titled *Learning to Die in the Anthropocene*, Roy Scranton (2015) suggests that if humankind plans to endure our climate crisis in any sort of recognizable form, then “We’re going to need new myths and new stories, a new conceptual understanding of reality” (p. 19). Indeed, much of the recent work involving humanities and climate change concerns itself with the insufficiency of previous narrative forms to appropriately capture the enormity of climate change. Amitav Ghosh (2016), in particular, laments that “climate change casts a much smaller shadow within the landscape of literary fiction than it does even in the public area” (p. 7). And while it’s certainly true that literary fiction has been slow to take up the challenge of addressing climate change, authors within fields of “genre writing” have led the charge on this topic for quite some time. Science fiction author Jeff VanderMeer possesses an oeuvre verdant with deeply passionate—and frightening—ideas about the symbiosis between humankind and nature. His 2014 novel *Annihilation*, specifically, proves an invaluable tool for conceptualizing some of the most abstract, yet pressing, concepts about humankind’s entanglement with climate.

VanderMeer’s novel revolves around a team of scientists venturing into a mysteriously fecund area on the American Gulf Coast referred to as Area X. Ostensibly sent to document the way that local flora and fauna adapt to a clandestine “event,” the crew quickly find themselves accosted by dolphins with eerily human eyes, wild boars seemingly capable of human calculation, vegetation mimicking human forms, and a sentient, prosaic plant that scrawls Jeremiad across the walls of an abandoned tunnel. These encounters, and countless others like them, force the explorers, and by extension readers, to fundamentally reorganize and conceptualize their ontological understanding of the environment.

We exist now in an epoch known as the Anthropocene. According to Timothy Morton (2018), “The Anthropocene is the name given to a geological pe-

riod in which human-made stuff has created a layer in Earth’s crust: all kinds of plastics, concretes and nucleotides, for example, have formed a discrete and obvious stratum” (p. 43). This, as Clark (2019) puts it, “weirdly science fiction scenario” (p. 17), challenges the notion of clear demarcations between humankind and nature, as one’s detritus has become an integral component of the other’s being. Much in line with this radical hybridity, VanderMeer posits circumstances that cleanly dispatch with easy conceptualizations of binaries.

The problem of perceived binaries has been at stake in environmental studies since at least Leo Marx’s landmark work, *The Machine in the Garden* (1964), in which he explored how pastoralized myths of American spaces ran headlong into industrialized progress. Uneasy distinctions between man/nature, nature/industry, and human/inhuman animate much early environmental theory, but such distinctions have recently come under fire. As Grusin (2015) points out in his introduction to *The Nonhuman Turn*, recent environmental criticism “challenges some of the key assumptions of social constructivism, particularly insofar as it insists that the agency, meaning, and value of nature all derive from cultural, social, or ideological inscription or construction” (p. xi). In line with this mode of thinking, much of the eeriness and power of VanderMeer’s novel emerges from its commitment to presenting nonhuman agents as autonomous beings capable of thought and action (though not always on levels that are comprehensible to its human characters). Upon discovering a journal left behind by her husband from a previous expedition into Area X, the protagonist, known only as the Biologist, learns that he had “grown suspicious of the entire idea of borders” toward the end of his experience within Area X (p. 166). At stake within this comment is the perceived safety embodied within concrete delineations. A clear distinction between human and animal, plant and conscious lifeform, would prove comforting, but

## Reading *Annihilation* in the Anthropocene, continued

VanderMeer denies his characters, and by extension readers, such easy binaries.

Ruminating on the overwhelming implications of these hybridities, the Biologist laments, “We had not been trained to encounter what appeared to be the uncanny” (p. 69). The concept of the uncanny, of things coexisting that conventional logic deems should not, undergirds much of the novel. Late in the text, the Biologist examines cells from Area X plantlife to learn that they are “composed of modified human cells” (160). As the Anthropocene has disrupted understandings about the delimitation between nature and refuse, so does VanderMeer destroy the line separating plant and human. Readers, then, must entertain the possibility of an ecology that refuses to play by the rules humans that have conceptualized for it, and, in turn, to confront the reality that such ideas are at the heart of Anthropocene thinking.

Near the end of *Annihilation*, the Biologist wonders, “What occurs after revelation and paralysis?” (179). The question refers to her specific plight, but applies equally well to current questions about (in) action regarding climate change. How do we and should we act following the irrefutable evidence of humankind’s impact on the planet, our inextricable concatenate connection with all things, and the frightening prospect that our best efforts cannot lead us toward any sort of “sustainable” future? Bill McKibben (2011) argues that “The scientists have done their job—they’ve issued every possible warning, flashed every red light. Now it’s time for the rest of us—for the economists, the psychologists, the theologians, and the artists, whose role is to help us understand what things *feel* like” (p. 3)—to do our parts. As if responding to McKibben’s call, VanderMeer cogently and unnervingly prods readers to *feel* the discombobulation that comes with life in the Anthropocene, to *feel* the uneasiness engendered by a nature that refuses to adhere to humankind’s expectations, and to *feel* the terror concomitant with the understanding that our best efforts will not save us, not in any recognizable way. As such, *Annihilation* proves not

only an entertaining thriller into the depths of human understanding, but also a prescient warning of the conflicts of knowledge that we should be prepared to encounter.

### References

- Clark, Timothy. (2019). *The value of ecocriticism*. Cambridge: Cambridge University Press.
- Ghosh, Amitav (2016). *The great derangement*. Chicago: Chicago University Press.
- Grussin, Richard. (2015). Introduction. In Richard Grussin (ed.), *The nonhuman turn* (pp. vii-xxix). Minneapolis: University of Minnesota Press.
- McKibben, Bill. (2011). Introduction. In Mark Martin (ed.), *I’m with the bears: short stories from a damaged planet* (pp. 1-5). New York: Verso.
- Morton, Timothy (2018). *Being ecological*. London: Penguin Books.
- Scranton, Roy. (2015). *Learning to die in the Anthropocene*. San Francisco: City Lights.
- Vandermeer, Jeff. (2014). *Annihilation*. New York: Farrar, Straus and Giroux.

## Scenting Community: Microbial Symbionts in Octavia Butler's *Fledgling*

Melody Jue, Ph.D., University of California, Santa Barbara

The final courtroom scene in Octavia Butler's vampire novel, *Fledgling* (2005), has perplexed readers as something of an anticlimax. As Gerry Canavan (2016) notes,

When I have taught *Fledgling* to my students, I have been struck by their widespread sense, despite enjoying the novel, that the ending is abrupt, or that the book even seems unfinished. The ending is also deeply unexpected: what begins as a vampire fantasy novel ends, weirdly, in an Ina [vampire] courtroom, hashing out the peculiarities of Ina legal traditions and the complex nature of Ina citizenship. (p. 167).

It does indeed seem strange that a novel that began with the visceral drama of Shori (a hybrid Ina/human with black skin) surviving a fire and gradually building back up her human symbiont family through various acts of seduction would conclude with senior Ina sitting in chairs in a courtroom debate. It is strange, that is, unless you read the novel not only as a fantasy, but as a detective story or as a fantastical spin on an ancient Greek Tragedy. Because *Fledgling's* courtroom scene centers around questions of justice—were Shori's families murdered by the Silk family out of racial/species prejudice?—it offers striking similarities to the third play in Aeschylus's *Oresteia* trilogy called *The Furies*, which famously settles a series of intra-familial murders in an Athenian courtroom, where citizens surrender vigilante justice to a (presumably) impartial judge.

Yet what is notable about the courtroom scene in *Fledgling*—despite its philosophical rather than action-packed nature—is its ambience, and the role of sense of smell in scenting out truth. *Fledgling* is an ecological fiction not only through its vampiric focus on “companion species” relations in the fullest sense of Haraway's term—eating together—but also through its attention to smell as a particular mode of environ-

mental sensing and world-building. Although the Ina see themselves as superior to humans (who they can control through their venom), the Ina have an acute sense of smell which would seem to place them closer to the domain of animals according to existing Western assumptions. Hsuan Hsu (2018) notes the “long-standing denigration of smell in Western aesthetics,” and that Kant once “categorized smell and taste as ‘chemical’ senses with lower aesthetic capacities than vision and hearing.” Butler turns this assumption on its head in the scene of the courtroom, which relies not only on verbal testimony, but also on the Ina's sophisticated ability to read and interpret smell and body language. As Shori's romantic interest, Daniel Gorton, explains to her, “Our judges are our elders, people who have lived three, four, five centuries. They sense truth more effectively than people my age, although I can sense it, too,” (220). Daniel notes that friendship and family connections can get in the way, hence the stipulation that council members be related by blood to both sides. “At best, they can be fairly certain when someone fully believes what he's saying. They sense stress, changing degrees of stress. You do that yourself, don't you? You smell sweat, adrenaline, you see any hit of trembling, hear any difference in the voice or breathing or even the heartbeat,” (245). As is true of many non-human others in Butler's fictions, words are not the only semiotic medium, but exist in parallel to more sophisticated forms of biochemical literacy. Like the Oankali in Butler's *Xenogenesis* trilogy, the Ina are sophisticated readers (smellers?) of the body as a dynamic text that constantly exudes its own subconscious signs and signals.

However, what is on trial is not just the “truth,” of whether or not the Silk family intentionally murdered Shori's female and male families (they did); what is on trial is the objectivity of olfactory judgment itself. Katherine Dahlman, the Silk family's advocate, complains of Shori: “No one can be certain of the truth of anything you say because you are neither Ina nor human.

## Scenting Community, continued

Your scent, your reactions, your facial expressions, your body language—none of it is right,” (272). While it would be tempting to pass this off as racist/speciesist prejudice, there seems to me an unresolved question regarding the objectivity of her—or anyone’s—sense of smell. Is it prejudice that is affecting Katherine’s interpretation of smell and body language, or the other way around? Is she bothered by not being able to get a “read” on Shori? Or might it be the case that Katherine and the Silk family, who (as do all Ina) pride themselves on the truth-sensing value of their own sense of smell, find themselves so convinced that Shori smells “wrong” that they leave no room to question their own olfactory interpretation?

Right from the beginning of the novel, Butler raises the possibility that one’s sense of smell can lie. When Shori (before she knows her own name) wakes in a cave in severe pain and sensory disorientation, all she knows is that she is hungry. She attacks and eats a deer that approaches her—the Ina eat meat instead of blood only when they need to recover from extreme injuries—only to later discover that it wasn’t a deer, but a man (Hugh Tang), one of her relative’s symbionts who was looking for her. This realization deeply disturbs her, not just on an ethical level, but because it so clearly demonstrates that even her sense of smell can be completely deceived under certain circumstances. If injured, she could accidentally mistake one of her own treasured human symbionts for mere meat, instead of a companion from whom she needs emotional as well as physical nourishment. This precedent for the misinterpretation of olfactory signaling shows that the Ina’s sense of smell is not necessarily the ultimate lie detector, but an instrument that is itself, perhaps, situationally and environmentally dependent. Like language, scents do not mean things in a vacuum unto themselves, but are subject to conflicting interpretation. Thus Shori’s observation that “The tension in this place is like a bad smell” (304) is as much a literal statement as it is figurative, describing the courtroom as a scene of olfactory conflict—of dueling interpretations and, at the same time, dueling pheromones.

Putting olfaction on trial is itself a crisis, in part, because of the long history of forensics and olfactory sensing that places trust in the sense of smell. As Judith Roof has pointed out, the homonym of nose/knows carries weight through the association of smell with the direct sensation of reality. What is “scents-able” is detectable, and often an affirmation of presence. Hsuan Hsu (2018) traces metaphors of scenting back to 19th century detective fiction, including Edgar Allan Poe’s “The Murders in the Rue Morgue” (1841) and Arthur Conan Doyle’s *Sherlock Holmes* stories, where an unusual odor is often a clue that discloses some underlying truth. Thus, despite the devaluation of smell as a more animal or lower sense, there is also a longstanding cultural tradition of linking smell with the undeniable, with truth-finding itself.

While *Fledgling* does conclusively reveal that the Silk family murdered Shori’s families, it does not fully explore the implications of the possibility that Shori smelled “wrong” to the Silk family. This is not to side with the obvious racial and species prejudice of the Silk family, but rather, what I want to point out is that Butler did not quite push past an anthropocentric view as much as she could have. When I have taught the novel, my students have commented on how Butler seemed a bit restrained in her descriptions of smell, or what smell is “like” for Shori and other Ina, holding back from any rich sensory comparisons. While Butler does (as with many of her other novels) consider genetics and hybridity, she could have gone even further in teasing out the implications of the symbiotic microbes that all bodies live with.

To really understand the production of bodily smell, you have to consider the holobiont, the sum of the body plus its microbes. In his book *I Contain Multitudes: The Microbes Within us and a Grand View of Life*, science writer Ed Yong (2016) shows how important microbes are to the development and health of humans as well as other megafauna. Yong describes being human as being a kind of archipelago for communities of microbes, with particular communities (like the assemblage under the armpit) producing an espe-

## Scenting Community, continued

cially distinct smell from the byproducts (metabolites) of their own biotic processes. Here the human body is not just an individual, but also an environment that hosts a whole community of microbes whose composition varies from person to person. The implication is that what we think of as a person's individual smell is actually the collective exudation of our symbiotic microbial communities. Smell is collectively authored, even as it is subject to reader reception.

Yong's synthesis of microbiome science and its implications for reading smell offers a different way to read the racism and speciesism in *Fledgling*. If we take the Silks at their word, and that what is objectionable is Shori's smell, then what the Silks are really objecting to is the scent of her microbial assemblage. The smell of this assemblage likely does contain some human-associated microbial symbionts that allow Shori to do things like walk in the daylight with only a mild burn, or to digest some human foods. For example, Shori's human symbionts "dared me to taste the coffee, and I tasted it. It was less appealing than plain water, but not disgusting. I wondered what other human food or drink I could tolerate," (305). Since gut microbes are key in any digestive process in animals, it seems that Shori is not only part genetically human, but also has some of the same microbial partners as humans. Butler's focus on genetic engineering and DNA as the source of Shori's species difference is thus only part of the picture—this difference also includes microbial symbionts.

We might re-narrate the situation thusly: to the Silks, it is not that Shori herself smells off, but rather that her particular assemblage of symbiotic microbes smells off because it includes both Ina and human associated strains. This invisible microbiome enralls some, while repelling others. Although there is a long history of racial prejudice tied to smell, it seems odd to me that what the Silks find offensive about Shori is tied to her microbial symbionts, because in a way, the Ina as a species already have a deep cultural and material appreciation for their own reliance on macro-symbionts—humans. They literally cannot survive without blood nourishment, but also

come to depend on humans for emotional care and support as well. The Silks seem tied up with the hierarchical view of being Ina (at the top of the food chain) despite their immediate knowledge of being reliant, in physical and emotional ways, on their human symbionts. What they demonstrate, I argue, is not just racial prejudice and aversion to human/Ina genetic hybridity, but a failure to fully extend the posthuman (post-Ina) logic of living with symbionts and its full implications, of a self whose olfactory signature and signaling is collectively composed. Shori does not control or choose how she smells, but rather, her scent is authored by her microbiome. Prejudice against smell is an instance of racism that is not precisely about color, but about the skin as the site of a microbial community whose thriving and maturation produces a variety of individualized scents.

For all the veracity that the Ina grant to olfaction, it turns out that sense of smell is not as pure as they would hope. To play on words, smell is always susceptible to... taste, if we take taste to mean personal opinion and its sway over the interpretation of signals. What is perhaps remarkable in *Fledgling* is how resilient Shori's microbial community is, for despite the burns of the fire that take her skin away, Shori recovers and still smells familiar to those who knew her—even if she cannot recognize herself, a vampire who is figuratively rather than literally invisible in the mirror.

## References

- Butler, O. (2005). *Fledgling*, Seven Stories Press.
- Canavan, G. (2016). *Octavia E. Butler*, University of Illinois Press.
- Hsu, H.L. (2018). Smelling Setting. *Modernism/Modernity* 3(1), <https://doi.org/10.26597/mod.0048>.
- Yong, E. (2016). *I Contain Multitudes: The Microbes Within us and a Grand View of Life*. HarperCollins.

## The Ecologies of Postwar Hard Science Fiction and Where to Find Them

Veronika Kratz, Carleton University

Hard science fiction (sf) is not usually associated with ecological concerns, especially before the 1960s. Most of the histories that look at hard sf from this period have ignored ecology, or else pushed it aside as something impractical for use in the building of worlds. David Samuelson's *Modes of Extrapolation: The Formulas of Hard SF* (1993), which provides a detailed examination of how certain scientific principles are taken into account in the creation of fictional worlds, ranked ecological world building as the most difficult task next to anthropology and "culture-building" (p. 212). In *Close Encounters: Science and Science Fiction*, Lambourne et al. (1990) simply explained that ecology was too broad to be of much use in hard sf, which required simple, teachable principles for readers to learn. Samuelson's and Lambourne's criticisms can both be attributed to a sense that ecology is too much of a "soft" science to be used in hard sf (which is usually described as science fiction that focuses on the "hard" sciences like physics, chemistry, and mathematics). However, there was a time when ecology was not so securely categorized as "soft," and it is in this moment that a careful study can reveal a wealth of ecological hard-sf stories that have previously been overlooked. Briefly, I will illustrate how we can locate these lost works of ecological hard sf in the postwar period, as well as how they can help us to create a more complex history of ecological science in American cultural thought.

One reason why postwar ecological hard sf is overlooked is because it is simply hard to find. A notable exception to this difficulty is Jeff and Ann VanderMeer's anthology, *The Big Book of Science Fiction*, which is carefully positioned as a collection of ecologically minded sf stories with an impressive historical range. This anthology is an excellent resource for scholars interested in exploring the pulp-side of ecological sf. Here you will find works like James Schmidt's 1955 "Grandpa," a fascinating example of a scientific problem narrative (that narratological hallmark of hard sf) wherein the alien ecosystem is the problem to be

solved by the characters.<sup>1</sup> Schmidt's story is easier to find as an example of ecological hard sf because his work would become increasingly ecological in focus throughout his career, with stories like "Balanced Ecology" in 1965. And so, this is the first technique to find overlooked ecological sf—work backwards from authors who would continue to develop their ecological thinking as the science itself was developed and popularized into mainstream American culture.

Perhaps the greatest difficulty in finding works of ecological hard sf is that terms like "ecology" weren't widely known or used until the 1960s. The discipline of ecology was less popular than it is today before famous environmentalists like Rachel Carson and James Lovelock helped to bring it to the forefront of public attention through environmentalist causes. When subgenres like hard sf were first described by authors and critics in the 1950s, "ecology was near the bottom of the scientific disciplines in prestige and support," and as E.O. Wilson explains, "few Americans even knew what the world meant" (2002, p.357).<sup>2</sup> Studying postwar ecological hard sf involves looking for ecology in stories that often don't use the term. This requires a reconsideration of search terminology. Instead of "ecosystems" and "biospheres," "Exobiology," "food webs," and even complex world-building emerge as the ecological terms of the postwar period. Using this language, you can find stories like Schmidt's "Grandpa," which was anthologized in Arthur C. Clarke's 1967 *Time Probe* for its use of "exobiology."<sup>3</sup> You might also find Poul Anderson's novel, *War Of the Wing Men* (1958), where community dynamics between species groups is crucial to the world building process, or Clifford D. Simak's "The World that Couldn't Be" (1958), where life cycle analysis provides the solution to the problem narrative.

So now we have the means to find postwar ecological hard sf, but the question of why we might want to explore these messy worlds remains. Why do we care to find these works and their ecologies? For

**Ecologies of Postwar Hard SF**, continued

one, it deepens the history of ecology in the genre and extends our conception of ecological sf to include the pulp stories of the 1950s. This extension also presents a different conception of ecological science. These stories present us with an example of an ecology that is distinctly not environmentalist. Here, ecology is a “hard” science, used in these stories as a way to increase human control and mastery over the environment. The “solutions” to the environmental problems presented in these texts are not rooted in conservationist or preservationist ideas. Instead, they are focused on gaining a better understanding of living systems for their manipulation. While their use of science to control and exploit the natural world can be recognized today as a product of wasteful Western ideas of resource ownership, these early texts attempt to position ecology—by another name—in a world that might otherwise overlook it altogether. Authors like Anderson, Schmidt, and Simak were early interpreters of a science that, in the next few years, would develop into an integral part of the U.S. environmentalist movement. By paying attention to the ecological problem narratives that these postwar sf authors present in their texts, we can better understand the history of ecology and its transition into a science whose public persona as well as much of its research, aligned with the social goals of environmentalist work.

**Notes**

<sup>1</sup> See Gary Westfahl (1993) for a detailed examination of this narrative, and in particular, Brian Stableford (2005), for one of the only examinations of ecology and hard sf, which he explains modifies this tradition to use the ecological problem narrative.

<sup>2</sup> It is unclear whether this use of “world” instead of “word” on Wilson’s part was accidental, but it is striking nonetheless.

<sup>3</sup> Exobiology, as Clarke describes it, studies the possibilities of alien life with a view to anticipating and solving the future problems of humanity’s exploration of space (p. 89). Specifically he cites NASA’s growing

interest in a manned mission to Mars as the real-world relevance of the story, to the point that fictional engagement with exobiology will help humanity deal with the future threats of space-travel.

**References**

- Clarke, A. C. (1972). *Time probe*. Lowe & Brydone Ltd.
- Lambourne, R., Shallis, M. & Shortland, M. (1990). *Close encounters? Science and science fiction*. IOP Publishing Ltd.
- Samuelson, D. N. (1993). Modes of extrapolation: The formulas of hard SF. *Science Fiction Studies*, 20(2), 191-232.
- Stableford, B. (2005). Science fiction and ecology. In David Seed (Ed.), *A companion to science fiction* (pp. 143-158). Blackwell Pub.
- Westfahl, G. (1993). ‘The closely reasoned technological story’: The critical history of hard science fiction. *Science Fiction Studies*, 20(2) 157-175.
- Wilson, E.O. (2002). Afterword. In Rachel Carson, *Silent Spring* (pp. 357-363). Houghton Mifflin Harcourt.

## Mortal Critters Join Forces: Living in a Kaiju Film

Bridgitte Barclay, Ph.D., Aurora University

We are living in a monster movie. The abandoned cityscapes of the COVID-19 quarantine and militarized police violence during Black Lives Matter protests bring to mind the razed cities in kaiju films such as the *Godzilla* and *Gamera* series. The mid-twentieth-century films take part in what Susan Sontag calls “aesthetics of destruction,” campy demolition that replays atomic devastation and allows viewers to “participate in the fantasy of living through one’s own death [...], the death of cities, the destruction of humanity itself” (Sontag, 1966, p. 212). In these mid-century films, the campy special effects of humans in rubber monster suits clumsily destroying miniature models of cities playfully reproduces actual horrific events, working through the violence with camp, which uses absurdity as resistance. But the current large-scale aesthetics of destruction also exposes less visible slow violence, which Rob Nixon (2011) defines as “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” (p. 2). The lure of kaiju films is the aesthetics of destruction, but *Gamera vs. Zigra* (1971) uses it to expose slow violence, and the campy film can offer a way of analyzing our current monster movie, “Mortal Critters vs. Murder Hornets.”

*Gamera vs. Zigra* (1971) is an example of environmental SF that explicitly demonstrates both the aesthetics of destruction and slow violence. When I presented on the *Gamera* series at the 2015 Association for the Study of Literature and Environment conference, I realized that few people had heard of *Gamera*. The important thing to know is that *Gamera*—camp at its best—is a jet-fueled, acrobatic, child-saving turtle kaiju first freed from Arctic ice in 1965 during an atomic accident. A few films into the series, *Gamera vs. Zigra* (1971) is set in a Sea World marine center and focuses on ocean pollution. The fish-like kaiju, Zigra, invades Earth, rages about contaminated oceans, and plans to kill all humans for causing it. The film asserts the permeable boundaries—what Stacy Alaimo calls

“trans-corporeality” (Alaimo, 2014, p. 238)—between bodies and environments, addressing real-world environmental health issues of the time.

The film premiered just a few years after Shoji Kitamura published his results on the mercury-laden sea life in Minamata Bay, and the film reflects those trans-corporeal health and environmental concerns. Brett L. Walker writes that Kitamura’s research showed the degree of mercury pollution from the Chisso fertilizer and plastics factory that caused methylmercury poisoning, referred to as Minamata Disease (Walker, 2010, p. 148). The disease—which impacted birds, cats, and humans that ate the toxic fish—caused lesions on victims’ brains, producing convulsions. Locals called it “dancing-cat disease” because cats who ate the fish “became delirious and wandered and wobbled throughout villages near Minamata City” (Walker, 2010, p. 145). While *Gamera vs. Zigra* (1971) does not address the trans-corporeal issues of methylmercury poisoning, the storyline does invoke toxic trans-corporeality with heavy-handed commentary about human impact on oceans and sea life.

The same aesthetics of destruction and slow violence are evident in the monster movie we are currently living in. Like the campy film about serious topics, the absurdities of politicized medical advice, discord over masks, and Trump tear-gassing citizens to pose in front of a church are painfully ludicrous. And our streets are changed. Images of quarantined Paris, São Paulo, and New York, for example, are haunting. Images of police violence during Black Lives Matter protests are chilling. Like the aesthetics of destruction, these flashpoints expose often less visible slow violence, such as the greater impact of COVID-19 on IBPoC (Indigenous, Black, and People of Color) communities. The current moment tallies slow violence in a form more people can see, but as Harriet A. Washington writes, these issues are longstanding: “Marginalized minority ethnic groups have increased exposure to environmental pollution and reduced access

**Mortal Critters Join Forces**, continued

to health care,” and toxic exposure is connected to “increased likelihood of dying from COVID-19” (Washington, 2020, para. 4). Additionally, Black Lives Matter protesters may be more at-risk for the virus because tear gas spreads the disease and exacerbates respiratory health issues (Singh, 2020). The COVID-19 crisis and police violence at Black Lives Matter protests expose such insidious, long-standing systemic violence of toxicity and inequality, like a kaiju emerging from its icy sleep or arriving from another planet to begin its destruction. I can imagine Zigma chiding us earthlings to fix our messes.

But this exposure of slow violence also makes visible the hope of intra/inter-species solidarity. The destruction is just part of the story; the promise of revealed slow violence is that it holds the potential to transform toxic systems. Once the issues are more visible to more people, we can address them. Sean Rhoads and Brooke McCorkle write that from 1971-1973, “Japan’s environmental situation began to markedly improve” and that court decisions “led to not only direct compensation for the victims of industrial pollution,” but also led to preventative regulations (Rhoads and McCorkle, 2018, p. 136). The film did not make that change, of course, but it was part of cultural attention to toxicity. Flashpoints illuminate. The light making slow violence visible can lead to solidarity and change. Donna Haraway (2015) writes, “One way to live and die well as mortal critters [...] is to join forces [...] to make possible partial and robust biological-cultural-political-technological recuperation and recomposition” (p. 160) because “all earthlings are kin in the deepest sense, and it is past time to practice better care” (p. 162). In *Gamera vs. Zigma* (1971), Gamera saves earthlings, but they realize that Zigma is right about pollution. The campy film emphasizes the importance of reverence for water, a serious message with real-world impact. Ecocritical readings of kaiju films like these can expose and thereby address the slow violence of toxic systems and help us address the slow violence of our own toxic systems, hopefully before murder hornet kaiju start smashing cities.

**References**

- Alaimo, S. (2010). *Bodily natures: Science, environment, and the material self*. Indiana University Press.
- Haraway, D. (2015). Anthropocene, capitalocene, plantationocene, chthulucene: Making kin. *Environmental Humanities*, 6 (1), 159-165.
- Nixon, R. (2011). *Slow violence and the environmentalism of the poor*. Harvard University Press.
- Rhoads, S. and McCorkle, B. (2018). *Japan’s green monsters: Environmental commentary in kaiju cinema*. McFarland & Company.
- Singh, Maanvi. (2020, June 6). Teargas and pepper spray will accelerate spread of COVID-19, doctors warn. *The Guardian*. <https://www.theguardian.com/us-news/2020/jun/06/teargas-coronavirus-george-floyd-protests>
- Sontag, S. (1966). The imagination of disaster. In *Against interpretation, and other essays* (pp. 209-225). Picador.
- Walker, B. L. (2010). *Toxic archipelago: A history of industrial disease in Japan*. University of Washington Press.
- Washington, H. A. (2020, May 19). How environmental racism is fueling the coronavirus pandemic. *Nature*. <https://www.nature.com/articles/d41586-020-01453-y>
- Yuasa, N. (Director). (1971). *Gamera tai shinkai kaijū jigura*. [*Gamera vs. Zigma*] [Film]. Daiei Film Co.

Infinite Search | Rosana Azar



Acrylic on Canvas

## Monolithic, Invisible Walls:

The Horror of Borders in Jeff VanderMeer's *Southern Reach* Trilogy

Pearson Bolt, University of Central Florida

**Abstract:** Beneath the sleek veneer of Jeff VanderMeer's weird-fiction saga, *The Southern Reach*, lurks a potent critique of the unnatural horrors inherent in borders. Amidst the twisting, sensuous lyricism of VanderMeer's prose there exists an insistent, recurrent fear of colonization and control. Using the work of decolonial, indigenous critics like Robin Wall Kimmerer and Nick Estes as well as that of ecocritics such as Donna Haraway and Timothy Morton, I argue that the chief terror in *Annihilation*, *Authority*, and *Acceptance* is Area X itself and the way in which it centralizes colonization and control. What's more, I assert that the trilogy's anti-Edenic conclusion is not a moment of posthumanist nihilism, but rather a transhumanist vision of a decolonized, biocentric ecology rooted in communization that acknowledges what Timothy Morton deems the "symbiotic real," the intricate symbiosis of all lifeforms. I propose that *The Southern Reach* trilogy can ultimately be read as a work of speculative fiction that confronts the terror of borders and counters the hegemony of anthropocentrism with a just, biocentric alternative.

**Keywords:** borders, monsters, VanderMeer, *Southern Reach*, kinship

Of all the cruel inventions devised to divide and segregate, borders are perhaps the most ubiquitous. Despite their relatively recent introduction to the realm of geopolitics, the biopower of borders has proven to be a useful tool of imperialism, white supremacy, and colonization in an ostensibly "postcolonial" world. What's more, the entirely fictitious borders that divide humanity from non-human animals are hegemonic manifestations of anthropocentrism. Dormant within every border—from the material to the ideal—is the implicit (and all-too-often explicit) threat of violence that manifests itself by restricting the movement of earthly critters while leaving the flow of capital uninhibited. Whether they are rendered visible through the technologies of control that have a vise-grip on geographic checkpoints or invisible through the illusory architecture of oppression expressed in state-power, borders bifurcate our biome, a phenomenon which has led to the ongoing exploitation of the Global South at the hands of multinational corporations and capitalist states.

The ontology of borders is a recent phenomenon. As Harsha Walia (2013) demonstrates in *Undoing Border Imperialism*, borders have enjoyed a relatively short history in the political imagination. "Border

imperialism encapsulates a dual critique of Western state-building within global empire," Walia writes, including "the role of Western imperialism in dispossessing communities in order to secure land and resources for state and capitalist interests, as well as the deliberately limited inclusion of migrant bodies into Western states through processes of criminalization and racialization that justify the commodification of their labor" (Walia, 2013, p. 22). Not only is border imperialism a monstrous edifice of twenty-first century state-power, but it is also the cruel process by which the gears of late-stage capitalism continue to exploit and disenfranchise those who exist outside of the imperial core.

To understand the unique anxieties afflicting a given culture's zeitgeist, one need look no further than the imaginary monsters conjured in works of popular culture. Horrors, Jeffrey Jerome Cohen proposes in *Monster Theory: Reading Culture* (1996), arise because "the monster's body is a cultural body" (Cohen, 1996, p. 4). These monsters emerge from the shadows of material, sociopolitical afflictions. By investigating the terrors, travesties, and tragedies plaguing contemporary geopolitics, we can illuminate their cultural saliency and challenge their hegemony simultane-

## Monolithic, Invisible Walls, continued

ously. Beneath the sleek veneer of Jeff VanderMeer's weird-fiction saga, *The Southern Reach*, lurks a potent critique of borders' unnatural horrors. Using the work of indigenous critics like Kimmerer (2013) and Walia (2013), I argue the chief terror in *Annihilation*, *Authority*, and *Acceptance* is Area X itself and the way in which it centralizes colonization and control. Nonetheless, the saga's triumphant conclusion ultimately offers readers a vision of a decolonized, biocentric ecology rooted in communization.

VanderMeer's prose, I propose, is best read in the proper context. In order to fully understand *The Southern Reach* trilogy, I'd contend that readers must consider all three of the novels in tandem—*Annihilation*, *Authority*, and *Acceptance*. I suspect it is no mistake that VanderMeer's publishers decided to ultimately release all three novels contained in a single, hefty volume simply titled, *Area X: The Southern Reach Trilogy*. *Annihilation* follows the journals of the Biologist, who plunges into a weird new frontier of unreal wilderness that comprises Area X. *Authority* picks up the thread with Control, a bumbling fail-son and former intelligence operative for the U.S. government who is tasked with "controlling" Area X and keeping it from growing in size. *Acceptance* unites the saga's cast of characters in a non-linear, time-skipping, extra-dimensional journey as they continue to plunge into the phantasmagoria of Area X in search for answers. Each of the novels contributes its own unique perspective to this analysis. While the themes of colonization, control, and communization percolate all throughout the trilogy, the chronology of the novels affords a useful lens to interrogate these three themes in conjunction with one another. Thus, we first turn to *Annihilation* and the subject of colonization.

### Colonization

"That's how the madness of this world tries to colonize you," VanderMeer writes in *Annihilation*, "from the outside in, forcing you to live in its reality" (VanderMeer, 2014, p. 109). In biology, a "colony" has an entirely different connotation than the imperialist notions that one might associate with history. To biologists, a

"colony" occurs when two or more individuals live in close association with—and are often connected to—one another. This ecological basis for understanding "colonization" is integral to understanding the duality of this term that VanderMeer employs throughout the text, an essential dialectic that mediates not only the characters' experiences but also the story's sociopolitical implications.

Area X, reaching across the cosmos through space and time, exerts its control over the biome of the Forgotten Coast (and, eventually, the entire planet) through the steady imposition of kaleidoscopic hyperreality, distorting the material world in order to serve its unknowable purpose. Area X magnifies the beauty and strangeness of the natural flora and fauna, exaggerating and mutating wildlife. Just as H.P. Lovecraft used his chaotic, eldritch horrors to explore the unknown, VanderMeer's evolutionary manifestations perfectly capture the way in which capitalist hegemony insinuates its tendrils across the world. Where Area X creates lavish life and color, capitalist enterprise ruthlessly exploits the biome in an endless quest for infinite profit. Yet, either way, the function is essentially the same: colonization which leads, inexorably, to control. As Frederic Jameson remarked, "It is easier to imagine the end of the world than the end of capitalism" (Fisher, 2009, p. 8). Beneath its often colorful and tantalizing veneer, colonization is so total that it has dominated our very minds, locking shackles about our wrists even as it builds walls around our psyches.

When characters enter the weirdly exaggerated biome of Area X, the strange hyperreality begins to infest their psyches. At times, Area X veritably possesses the unlucky explorers who have perforated its border. Only the Biologist seems to be capable of really resisting Area X's power. However, as we discover by the end of the trilogy, this is only because of the Biologist's masochistic propensity for self-mutilation. Moreover, ecological collapse and rebirth are on full display in *The Southern Reach* trilogy and any Marxist or decolonial critique would be woefully incomplete without the application of an ecofeminist

## Monolithic, Invisible Walls, continued

lens. It is worth pausing to consider the characters who survive until the novel's conclusion: Grace, the former director, who is an indigenous woman; Ghost Bird, who is a clone of the Biologist created by Area X; and Control—who, up until this point, has been utterly controlled by the Southern Reach's hypnotic suggestions. It certainly is not inconsequential that the series begins from the perspective of the Biologist. She is able to recognize an ephemeral beauty in Area X. "When you see beauty inside of desolation it changes something in you," VanderMeer writes. "Desolation tries to colonize you" (2014, p. 6). Ultimately, this is precisely what happens to the Biologist. By the time that *Acceptance* draws to a close, the Biologist has transformed into a mountain of flesh and eyes, lurching wildly through the wilderness of the Forgotten Coast. Yet, when given the chance to destroy her clone, Ghost Bird, as well as Control and former director Grace, the Biologist demurs. I wager that this is because the Biologist understands the hidden truth behind the hyperreality of Area X, which is a transcendental vision of humanity's place in the biome.

Throughout *The Southern Reach* trilogy, VanderMeer's characters consistently refer to the bordered demarcations of Area X. In their anthropocentric hubris, the staff of the Southern Reach came to think "of the border as this monolithic, invisible wall" (2014, p. 157). Only the Director realized that the border was not static and fixed, but transitory, even sentient. "The border is advancing," the Psychologist/Director/Cynthia/Gloria tells the Biologist at the climax of *Annihilation*. "For now, slowly, a little bit more every year. In ways you wouldn't expect. But maybe soon it'll eat a mile or two at a time" (2014, p. 129). We can see that this is precisely how borders operate, in general: gobbling up land for resource extraction and the immiseration of the indigenous peoples and non-human animals who dwell there. This sort of imperialism is distinct from the national liberation sort, in that its object is to dominate and exploit rather than emancipate.

The apartheid wall in Palestine is perhaps the preeminent example of the function of border imperialism: imposing the will of one state—in this case, Israel—upon a dispossessed populace. Many Palestinians are forced off of their ancestral lands, only to watch as bulldozers level their homes and Israeli settlers move in and construct tenement halls. (Lubell, 2012).

Jasbir Puar has noted that the Israeli Defense Force (IDF) has been known to deliberately aim for Palestinian marchers' knees with the explicit intention to maim. Her conclusion is that the Israeli state maims Palestinian populations in order to render their resistance "perpetually debilitated, and yet alive, in order to control them" (Puar 2017, p. x). We see the same thing happen in *The Southern Reach* trilogy as Area X twists and mangles the bodies of those it colonizes. The Moaning Creature that the Biologist encounters, we soon learn, is comprised of the mutated, amalgamated bodies of previous expedition members.

The Israeli apartheid wall is heavily surveilled. The IDF uses surveillance and reconnaissance drones to note the movements of Palestinian men and women. Towers capable of monitoring the movements of every life form within a seven and half mile radius loom over the border. Throughout *The Southern Reach* trilogy, the novels' characters routinely refer to a similar phenomenon, the terrible "regard" of Area X, and the way its gaze reduces them to their constituent atoms. This is precisely how *Annihilation* draws to a close. "I felt the impression from behind me of hundreds of eyes beginning to turn in my direction, staring at me," the Biologist recounts. "I was the prey the starfish had reached up and pulled down into the tidal pool... my skull crushed to dust and reassembled, mote by mote" (VanderMeer, 2014, p. 180). With its vast surveillance technologies, its ability to maim and con-tort, borders in the twenty-first century truly evoke a sense of Lovecraftian cruelty and otherness. The logic of border imperialism invariably tends towards establishing (and, subsequently, enforcing) control over a given population. So now we turn to the second

## Monolithic, Invisible Walls, continued

horror that dominates Area X and, indeed, haunts our own biome: control.

### Control

If *Annihilation* is all about the loss of control, *Authority* concerns the Southern Reach's (futile) attempt to reassert their dominance. John Rodriguez, the novel's main protagonist, literally calls himself "Control," despite the fact that he is very rarely in full possession of his own mental faculties. "He was Control," VanderMeer writes, "and he was in control" (2014, p. 194). But Control's attempts to assure himself of his sanity are just as fruitless as his project of directing the Southern Reach. For much of the novel, Control is being manipulated by the Voice through hypnotic suggestion. It isn't until later that we realize the "Voice" is Lowry, the lone survivor of the ill-fated first expedition into Area X.

Before the novel's rather apocalyptic conclusion, *Authority* finds VanderMeer investigating what Hannah Arendt (1963) deemed the "banality of evil," or what we might refer to as the obstinate obfuscation of bourgeois bureaucracy. "Institutions," VanderMeer writes, "were the concrete embodiments of not just ideas or opinions but also of attitudes and emotions" (VanderMeer, 2014, p. 228). The impulse behind the Southern Reach was to not only understand Area X, but also to harness and redirect it. Lowry, the man behind the Voice, became obsessed with manipulating others in the way that Area X had manipulated the first expedition, "to punish nature for having punished him" (VanderMeer, 2014, p. 441). Unfortunately, the institution bit off more than it could chew. As *Authority* progresses, the sanity of the Southern Reach's workers slowly erodes until nothing is left but madness and misery.

Control is consistently blindsided by the absurdity of the border. While on a jog, for instance, Control can't help but be mesmerized by the weirdness of the border, that it could exist in the same world as "the town he was running through, the music he was listening to" (2014, p. 182). Here, VanderMeer invites

readers to consider the weirdness of borders more generally. "The border was invisible," VanderMeer goes on. "It did not allow half measures: Once you touched it, it pulled you in (or across)" (2014, p. 182). For this is precisely what all borders do: in their demarcations, they pull us into accepting the concept of two distinct categories: us and them, human and animal, the subject and the Other. Both the "us" and the "them" are polarized, ostracized from each other and alienated from the very conditions that engender their immiseration. The logic of colonization is to conquer all and this is exactly how *Authority* concludes.

"The Southern Reach hadn't been a redoubt," Control realizes with horror, "but some kind of slow incubator...Placing trust in a word like border had been a mistake, a trap. A slow unraveling of terms unrecognized until too late" (VanderMeer, 2014, p. 329). Given time, the border creeps until it becomes ubiquitous. Nation-states in the twenty-first century represent a similar network of control, with the privileging of certain nations over others entirely dependent upon the hegemony of the ruling class. Global trade deals such as the North American Free Trade Agreement have led to the immiseration of the Global South not just because of colonization, but because of capitalists' ability to restrict the flow of labor while capital itself remains unimpeded.

The end result of colonization is depicted as a nightmarish horror, captured in Whitby's depraved mural, painted on the walls of the Southern Reach. "A vast phantasmagoria of grotesque monsters with human faces," VanderMeer writes, "The pixelated faces were blown-up security headshots of South Reach staff. One image dominated, extending up the wall with the head peering down...There was a border, too: a ring of red fire that transformed at the ends into a two-headed monster, and Area X in its belly" (VanderMeer 2014, p. 312). All of the Southern Reach is caught within the "constellation" of this vicious, macabre painting, the two-headed monster asphyxiating them all in a catastrophic circle (not unlike a snake encircling its prey.) As Area X's colonization becomes

## Monolithic, Invisible Walls, continued

complete, and it assumes control over not just the Forgotten Coast but the entire biome. Gloria reveals that the Biologist's question, "What does the border look like?" is infantile. "A child's question," VanderMeer writes. "A question whose answer means nothing. There is nothing but border. There is no border" (VanderMeer 2014, p. 362). But all is not lost.

### Communization

*Acceptance*, simultaneously the most horrific and hopeful of the three novels, immediately disrupts the relative simplicity of the preceding two books. Unlike *Annihilation* and *Authority*, which are told almost entirely from the limited perspective of a single character, *Authority* adopts the voices and perspectives of four different characters: the Director/Cynthia/Gloria/Psychologist, Saul Evans, John "Control" Rodriguez, and Ghost Bird. Just as the fractured narrative represents the eroding sanity of the novel's characters, this type of story-telling reinforces another crucial theme: *Acceptance* is about the transhuman act of decolonization and the triumph of relationality, reciprocity, and the symbiotic real. What's more, VanderMeer's choice to write the Director's chapters in second-person indicts the reader, forcing us to question our own culpability in anthropocentric ways of thinking while simultaneously inviting us to envision biocentric alternatives.

In *Humankind: Solidarity with Non-human People* (2017), Timothy Morton asserts that the only strategy capable of defeating the fascist impulse to exclude and demonize the Other is by reckoning with the symbiotic real—that is, the material reality of life's multifold interconnections (p. 11). Morton demonstrates that humanity is inextricably linked in symbiosis with the rest of the planet. Only by including every living being and all of nature within this new framework can we truly abolish the arbitrary borders that demarcate our cosmos. Fascism is rooted in creating an "explosive holistic," in which the Other is necessarily pushed to the margins, dehumanized, and ultimately annihilated (Morton, 2017, p. 33). The bug of Marxism, Morton contends, is that it has traditionally excluded the non-

human. But this bug can be deprogrammed through anarchistic approaches that shatter the "lingering theisms" dormant in communist philosophy (Morton, 2017, p. 33). Instead of venerating the human, Morton argues, human beings must transcend the narrow limitations of anthropocentrism and grapple with the symbiotic real.

Eyes unclouded by the Southern Reach, Control realizes that "the yearnings in him went in all directions and no direction at all. It was an odd kind of affection that needed no subject, that emanated from him like invisible rays meant for everyone and everything" (VanderMeer, 2014, p. 341). Slowly but surely, Control begins to realize the danger of human hubris thanks, in no small part, to Ghost Bird. "A whale is as intelligent as we are," Ghost Bird explains to Control, "just in a way we can't quite measure or understand. Because we're these incredibly blunt instruments" (Vandermeer, 2014, p. 414). The madness of the world has colonized Control and led him to believe that humanity is somehow superior to the rest of the biome. In order to survive within Area X, Control must debug his brain, which has been colonized by anthropocentric vanity.

Anthropocentrism is the ideology that causes Area X to germinate and flourish. In the flashbacks to Saul Evans' time as lighthouse keeper, we see that the lighthouse was infiltrated by the Science & Séance Brigade, an implicitly covert operation by the state. Saul's unassuming, humble life attending the lighthouse and spending time with his partner is interrupted by the machinations of the US government. Control's mother reappears in *Acceptance*, "long red scarf" and all, to oversee the investigation (VanderMeer, 2014, p. 497). Control's mother, a figure who has haunted the entire saga, is in many ways a stand-in for the state itself—the consolidation of power and centralized authority that haunts everything Control tries to do during his tenure as director. Control's mother thinks that she is cunning enough to control Area X. For her vanity, the Southern Reach staff are reduced to disturbing abominations—amalgamations,

## Monolithic, Invisible Walls, continued

half-transformed, lumbering piles of flesh that lurch zanily through the hyper-real wilderness of Area X.

Only Ghost Bird seems to truly understand the role of the human animal as an integral (but not central) part of the biosphere, as she is no longer fully human but something else. I contend that this otherness stems from her transhumanity, allowing Ghost Bird to see with eyes unclouded by anthropocentrism. Humans have to reach for “banal answers because of a lack of imagination, because human beings [can’t] even put themselves in the mind of a cormorant or an owl or a whale or a bumblebee” (VanderMeer, 2014, p. 490). What’s more, Ghost Bird, unlike her human companions, Grace and Control, accepts the existential meaningless of life. “You could know the what of something forever and never discover the why,” VanderMeer writes (491). But instead of being paralyzed by this material reality—as Grace was, barricaded at the top of the Lighthouse—Ghost Bird understands that she does not need a “mission” in order to move forward.

What she needs is kinship. As Control suffers from a panic attack after reading the Biologist’s last will and testament, Ghost Bird:

placed her arms around Control and held him...He thrashed in Ghost Bird’s arms, resisting, her feeling the preternatural warmth of him, and then eventually he subsided, stopped fighting, held her loosely, then held her tightly while she said not a word because to say anything—anything at all—would be to humiliate him, and she cared more about him than that. And it cost her nothing.”

(VanderMeer, 2014, p. 492)

I linger on this passage because it contains the answer that ought to animate any just response to the horrors of colonization and control: community. In a world devoid of purpose, it is our relationships that still possess the ability to give us joy in spite of our shared suffering. Ghost Bird realizes that love costs nothing. Or, stated another way: love cannot be commodified.

In her analysis of gift economies in *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*, Robin Wall Kimmerer shows how love resists commodification by exploring gift economies. Gifts are transitory, passing from one set of hands to another. “That is the fundamental nature of gifts,” Kimmerer writes, “they move, and their value increases with their passage” (Kimmerer, 2013, p. 30). Gifts can take many forms. Kimmerer writes about strawberries and socks as examples. But a gift can also be the intimacy of touch, a gesture of solidarity—which is precisely the gift that Ghost Bird gives to Control.

Kinship allows us to become active participants in the ongoing project of universal liberation. “We can celebrate our kinship with the world,” Kimmerer explains. “We can choose. If all the world is a commodity, how poor we grow. When all the world is a gift in motion, how wealthy we become” (Kimmerer, 2013, p. 33). Rather than thinking of decolonization as merely reparations and land return, the indigenous historian Nick Estes contends that decolonization also entails a reconstruction of “the kinship relations between Indigenous and non-Indigenous [peoples] and the lands we both inhabit. There is a capaciousness to Indigenous kinship that goes beyond the human and that fundamentally differs from the heteronuclear family or biological family” (Estes 2019, p. 256). In *Acceptance’s* anti-Edenic conclusion, Grace and Ghost Bird do not progress. Instead, they move laterally, shattering the heteronormativity of the rebirthing narrative with a queer alternative. Humanity is forever changed by the end of VanderMeer’s work. Unlike many post-apocalyptic narratives, there are no Adam and Eve to repopulate the planet. Humankind has been forever altered and must reckon once and for all with its place in the cosmos.

A borderless world looks like a “commune of communes,” of the sort currently modeled by the confederation of cantons in North East Syria, colloquially known as Rojava. To heal the scars we’ve cut into maps, the Earth, and to our own minds, we must begin to cultivate our relationality with the Earth, non-human

## Monolithic, Invisible Walls, continued

animals, and one another. This is why the word “commune” proves so useful. According to the *Oxford English Dictionary*, a commune is a noun with two distinct meanings: “a group of people living together and sharing possessions and responsibilities” and “a state of being ‘in intimate communication’ with other lifeforms. But commune is also a verb, “an interchange of ideas or sentiments.” In order to build communes, we must first commune with one another, with our non-human relatives, and with the Earth itself. To do so is to celebrate the heterogeneity of life, complex and diverse and multicultural. This is not just a theory of relationality, but a material reality capable of challenging anthropogenic climate change. If the human species is to survive on this planet, we must confront colonization and control and counter the death-drive of capitalism with communization by recognizing our kinship with all non-human beings.

In the Biologist’s final notebook, she explains the kinship that evolves between her and an owl that haunts an island caught in Area X. One way that we can interpret the owl in the text is as an analogue for the Biologist’s dead husband. But doing so, I would suggest, is ultimately a shallow reading of VanderMeer’s project. Morton writes:

An owl is an owl and the reason to care for her is not that she’s a member of a keystone species; we don’t need her to be a brick in a solid wall of world, we need to take care of her, play with her. This gives us a strong reason to care for one another, no matter who we are, and for other lifeforms. It gives us a leftist way of saying that we have things in common. We are humankind.

(Morton 2017, p. 40).

The implosive whole of the symbiotic real is a totalizing system, a singularity drawing everyone and everything into its universality. Why should it matter if the owl is, indeed, the Biologist’s transformed husband? If we accept the horizontality of the symbiotic real, then the owl is already the Biologist’s kin.

“Maybe,” Haraway suggest, “but only maybe, and only with intense commitment and collaborative

work and play with other terrans, flourishing, rich, multispecies assemblages that include people will be possible” (Haraway 2016, p. 101). The critters that populate this planet are our kin. Only by unmaking the walls around our heads and hearts can we move past anthropocentrism. Moreover, this unmaking of borders cannot only be an ideal, but it must be a material struggle, as well. As the anarchist thinker Murray Bookchin observed, “Nearly all of our present ecological problems originate in deep-seated social problems. It follows, from this view, that these ecological problems cannot be understood, let alone solved, without a careful understanding of our existing society and the irrationalities that dominate it” (Bookchin 2006, p. 19). These irrationalities—these dark contradictions at the heart of artificial hierarchies and hegemonic social constructs—must be dismantled altogether in order to create a horizontal superstructure in harmony with the symbiotic real.

In *Annihilation*, the Biologist explains that over the course of time, her husband had “‘grown suspicious of the entire idea of borders,’ although he could not yet synthesize ‘the intensity of this feeling’ into a coherent theory” (VanderMeer, 2014, p. 166). Fortunately, VanderMeer provides a theory for us by the series’ end. For this is how *Acceptance* concludes: with Grace, Ghost Bird, and Gloria accepting their place in the biome—not as the centerpiece, but as one crucial part of a larger whole. As Ghost Bird and Grace, the queer, anti-Edenic couple, march hand-in-hand into another ordinary summer day, they throw “pebbles to find the invisible outline of a border that might not exist anymore. They walked for a long time, throwing pebbles at the air” (VanderMeer, 2014, p. 587). We are left to ruminate upon the somber reminder that borders are not only invisible, they are at once intangible and permeable.

As befits a trilogy about decolonization, Gloria—the series’ sole indigenous character—has the last word. Written from the second person, VanderMeer concludes, “You are nowhere...you are everywhere” (2014, p. 592). For Gloria, acceptance gradually moves past denial to ultimately become defiance. To



**Monolithic, Invisible Walls, continued**

accept a transhumanist place in our biome is to defy the cancer of white settler colonialism, to struggle to build a new world in the shell of the old. Like Gloria, may we all learn to live dangerously on this rock (VanderMeer, 2014).

## Monolithic, Invisible Walls, continued

## References

- Arendt, H. (1963). *Eichmann in Jerusalem*. New York, Viking Press.
- Bookchin, M. (2006). *Social Ecology and Communalism*. AK Press.
- Guevara, ECG. (2012). *The Collected Works of Che*. International Press.
- Cohen, J.J. (1996). *Monster Theory: Reading Culture*. University of Minnesota Press.
- Deleuze, G. (1992). Post-script on the Societies of Control. *October*. 59, 3-7. [www.jstor.org/stable/778828](http://www.jstor.org/stable/778828)
- Devereaux, R. (2019). "We are still here": Native activists in Arizona resist Trump's border wall. *The Intercept*. <https://theintercept.com/2019/11/24/arizona-border-wall-native-activists/>
- Estes, Nick (2019). *Our History is the Future: Standing Rock versus the Dakota Access Pipeline, and the Long Tradition of Indigenous Resistance*. Verso Books.
- Fisher, M (2009). *Capitalism Realism: Is There No Alternative?* Zero Books.
- Gramsci, A. (1971). *Selections from the Prison Notebooks*. International Publishers.
- Haraway, D. (2016). *Staying with the Trouble: Making Kin in the Cthulucene*. Duke University Press.
- Kimmerer, R.W. (2013). *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*. Milkweed.
- Lubell, M. (2012). Israel Gaza blockade study calculated Palestinians' calories. *Reuters*. <https://www.reuters.com/article/us-palestinians-israel-gaza/israel-gaza-blockade-study-calculated-palestinians-calories-idUSBRE89G-0NM20121017>.
- Morton, T. (2017). *Humankind: Solidarity with Non-Human People*. Verso Books.
- Morrison, T. (1997). *The House That Race Built*. Pantheon Books.
- Parrish, W. (2019). The U.S. Border Patrol and an Israeli Military Contractor Are Putting a Native American Reservation Under 'Persistent Surveillance.' *The Intercept*. <https://theintercept.com/2019/08/25/border-patrol-israel-elbit-surveillance/>.
- Puar, J. (2017). *The Right to Maim: Debility, Capacity, Disability*. Duke University Press.
- VanderMeer, J. (2014). *Area X: The Southern Reach Trilogy*. Farrar, Straus, and Giroux.
- Walia, H. (2013). *Undoing Border Imperialism*. AK Press.

## No Windup: Paolo Bacigalupi's Novel Bodily Economies of the Anthropocene

Jonathan Hay, University of Chester, UK

**Abstract:** Just as it looms large in contemporary consciousness, the figure of the Anthropocene dominates the speculative fiction of the Hugo and Nebula award winning author Paolo Bacigalupi. The post-apocalyptic and post-capitalist settings common to Bacigalupi's oeuvre do not merely seek to depict unsettling Anthropocene landscapes. Rather, Bacigalupi's speculative fiction vicariously demonstrates the crucial role that embodiment plays, and will continue to play, in determining the impact of the Anthropocene upon human life. Our bodies, his works propose, are both the fabric upon which the horrors of the Anthropocene will be written, and the means by which we can learn to adapt to the rigors of our rapidly shifting planetary environment. As such, Bacigalupi's works propose a range of novel bodily economies, which are just as much potential alternatives to the damaging neoliberal ideologies of our contemporary world as they are statements of impending social upheaval and widespread human suffering. Through the textual analysis of a cross-section of Bacigalupi's works, this article demonstrates his emphasis upon the urgency and importance of our own societies learning to construct and implement alternate economic paradigms.

**Keywords:** Anthropocene Economics; Embodiment; Science Fiction; Paolo Bacigalupi

*If we continue to ignore the data that science provides us, if we continue to drive wedges between ourselves... if we continue to promote ignorance instead of competence, hatred instead of compassion, short-term profit over long term prosperity, I suspect our children will look at the broken worlds I've imagined and laugh at all of them, because these ravaged stories that I've created won't look bad to them at all.*

*They'll look like utopias.*

(Bacigalupi, 2017)

In the Anthropocene epoch,<sup>1</sup> it has become imperative to interrogate the value judgments that underpin our societies. Amitav Ghosh, for instance, alleges that the genre of science fiction is fundamentally misguided since, he reasons, literature can only succeed in communicating the import and immediacy of climate change via diegetic worlds "set in a time that is recognizable as our own" (2016, p. 73). Whilst Ghosh queries the enduring value of speculative fiction on the grounds that the Anthropocene is "not an imagined 'other' world apart from ours" (2016, p. 72), this article contrastingly seeks to demonstrate the relevancy of narratives set in futures ulterior to our own present. As I shall proceed to demonstrate, the speculative futures of the American author Paolo Bacigalupi succeed in communicating the immediacy of the Anthropocene through an embodied paradigm. Horrifying Anthropogenic phenomena, such as the devastating Australian bushfires of 2019 and early 2020, and the

continuing devastation of the Amazon rainforest, are increasingly frequent and escalating disasters that can be construed through the lens of our own bodies.

As Emma Rees states, "language fails in the face of embodiment... the visceral rapidly surpasses the linguistic" (2017, p. 5), and the embodied subjectivity of the human body therefore comprises a more effective vehicle for communication than language itself. Through the textual analysis of Bacigalupi's oeuvre, I demonstrate that his works gesture beyond language in precisely this manner, via their figuration of novel bodily economies. By situating otherwise distant and unfathomable visions of the Anthropogenic apocalypse in the bodily realm, Bacigalupi makes these alarming visions viscerally contemporary. Bacigalupi's novel bodily economies expose the insufficiencies of familiar language in describing our Anthropogenic present and future, and resituate the body and

## No Windup, continued

its phenomenological apparatuses as a principal site of Anthropocene communication.

However, the economic component of Bacigalupi's speculative bodily economies is just as crucial, as is patent in discourses about the Anthropocene. Naomi Klein elucidates that in the drive to reverse ever-rising carbon dioxide emissions, "our economic system and our planetary system are now at war... our economy is at war with many forms of life on earth, including human life" (2015, p. 21). As GDP-led economies are anathema to environmental pursuits, Klein is unequivocal that "the measures we must take to secure a just, equitable, and inspiring transition away from fossil fuels clash directly with our reigning economic orthodoxy at every level" (2015, p. 94). Yet, in long-term economic projections that account for the impact of the Anthropocene on world economies:

climate change promises almost no global growth; in much of the world hit hardest, in fact, negative growth... an impact much more severe than the Great Depression; it would be ten times as deep as the more recent Great Recession... And it would not be temporary.

(Wallace-Wells, 2019, p. 166)

These projections suggest that, in the coming decades, economies based on GDP growth will at first stall, and then shrink uniformly. In this scenario, amidst endemic fiscal uncertainty, economic ideologies of progress will become absurdly irrelevant. Accordingly, new economic conceptions and metrics will prove necessary in the Anthropocene, either as a result of proactionary measures, or compulsorily, as a means of survival upon a scarcely inhabitable planet. If human life is to persist through the Anthropocene, our embodied modes of existence will inevitably metamorphose as a result of altering planetary and economic conditions to an as-yet undetermined extent. By envisioning this ostensibly inexorable shift in embodied consciousness through a diverse range of novel bodily economies, Bacigalupi's novels detail a range of post-capitalist economic systems in an Anthropogenic paradigm.

As Kate Raworth underlines, no matter how we address the complexities of climate change, "one thing is clear: economic theory will play a defining role" (2018, p. 6). Specifically, she states that the twenty-first "century needs economic thinking that unleashes regenerative design in order to create a circular—not linear—economy, and to restore humans as full participants in Earth's cyclical processes of life" (2018, p. 29).

Bacigalupi's speculative bodily economies foreground humankind's embedded role within the Earth's ecologies, demonstrate the pitfalls and opportunities of novel economic paradigms, and depict the difficulties of implementing alternate economies as a workable alternative to GDP-led capitalist economies. Bacigalupi's speculative figuration of bodily economies therefore delineates a range of ulterior post-capitalist economies, while concurrently employing the viscerality of bodies to ground grotesque Anthropogenic visions within an intelligible paradigm. As this article demonstrates, via analyses of his short stories "The Pasho" (2004) and "Pop Squad" (2006); his novels *The Windup Girl* (2009) and *The Water Knife* (2015); and his novella, *The Children of Khaim* (2018), novel bodily economies are pivotal components throughout Bacigalupi's oeuvre.<sup>2</sup>

### "The Pasho" and "Pop Squad"

The diegetic worlds of "The Pasho" and "Pop Squad" are ostensibly unrelated, and as such, their novel bodily economies are strikingly dissimilar. Importantly, the post-apocalyptic world of "The Pasho" is overshadowed by "the bones of the old city... a tangled mass of steel and concrete ruin, silent and abandoned for more generations than even the Jai could remember" (p. 69). As the subjective accentuation of this scenic description underscores, its characters' understandings of history, and of their lifeworld, are resolutely embodied. Symbolically, "the old city stood silent" (p. 83), as the readily accessible knowledge of our technocultural age is now largely inaccessible. All surviving knowledge predating the collapse of their ancestors' society survives only in the bodies

## No Windup, continued

of individuals, and so the Jai and Keli peoples can only comprehend their lifeworlds within the parameters delimited by their own phenomenological experiences and cultural referents. All knowledge of our pre-apocalyptic world is now deliberately incarcerated within the bodies of a small number of individuals, such that the hubristic mistakes of our own age are not repeated.

The Jai and Keli peoples, respectively, populate two extremes within a devastated planetary landscape—an arid desert, and a flooded “water city” (p. 77)—both of which are intensely hostile to life. As Elizabeth Kolbert emphasizes, paleontological accounts of Earth’s prehistoric history reveal that whenever “the world changes faster than species can adapt, many fall out. This is the case whether the agent drops from the sky in a fiery streak or drives to work in a Honda” (2014, p. 266). On aggregate, contemporary societies have an immensely significant impact upon our planet, an impact which is greatly unfavourable to the continued existence of our species. Human “activity has transformed between a third and a half of the land surface of the planet” already, and as a result, “those of us alive today not only are witnessing one of the rarest events in life’s history, we are also causing it” (2014, pp. 108, 7-8). In “The Pasho,” the acute necessity of the Jai and Keli peoples’ wariness of their ancestors’ ruinous heritage, and their simultaneous avoidance of re-enacting their ancestors’ short-sightedness, is accomplished via the titular bodily economy of controlled knowledge.

The intellectual Pasho caste remains excruciatingly aware that their ancestors’ societies, in spite of their superior scientific and technological prowess, were decimated as a result of their forebears’ callous attitudes towards both their environment and their embodied situation. Their novel bodily economic paradigm accordingly ensures that technological development is carefully controlled and mediated, as it would only take a “few knowledgeable men” to “sweep the planet clean of all that remains” of human life (p. 88). The Pasho are consequently described

as “dandelion seeds... palms... roots” (p. 82); as such naturalistic imagery emphasizes, the surviving humans in the story have been forced to comprehend their embodied positionality as bodily agents within complex ecosystems which extend beyond their own comprehension.

The Pashos’ economic mission is centered upon the principle that “*Slow change is a virtue*” (Bacigalupe, 2010, p. 71) in the restoration of civilization. They readily acknowledge that their “*work is already generations long, and will be many more generations before it is complete*” (p. 89), and thus transform their own bodies into vessels of communal knowledge. The tattoos of a Pasho body are:

hooks into the core of Pasho knowledge, each one a memory aid and mark of passage. They covered his body in the spiking calligraphy of the ancients, sometimes a mere symbol to hook a bound tome’s worth of knowledge, something to recall, and ensure that all Pasho trained later might have access to an unchanging spring of wisdom. (p. 72)

Tattooed Pasho bodies literalize the distressing reality that first and foremost, the human traumas of climate change will ultimately be inscribed on the bodies of our descendants. Since “tattoos operate as semiotic devices that render entire bodies as readable texts” (Barron, 2017, p. 60), Pasho bodies recall that our species’ ecological short-sightedness will be our enduring legacy, inscribed on the bodies of successive generations.

The Pasho ensure that the knowledge of their societies is intractably tied to their bodies and the land that they live upon, thereby guaranteeing that societal developments are always posed in synergism with embodied experience. Their novel bodily economy comprises a mode of redress to the expansionist mistakes made by their ancestors, who engendered and exacerbated the Anthropocene by refusing to acknowledge the embeddedness of human existence within our planetary environment. By inscribing the knowledge of their society in the form of tattoos,

## No Windup, continued

Pasho bodies become instruments that surpass the vagaries of individualistic hubris and implicate themselves within their agential role as mediators of ecological reparation. Just as the tattoos of elderly Pasho are invariably “faded into the folds” of their skin (p. 77), embodied knowledge is the only valuable form of knowledge in the post-apocalyptic landscape that they strive to rehabilitate.

Tattoos serve as a constant reminder of the collective Pasho drive to create an equitable, sustainable, and ecologically-conscious economic system out of the ashes of their ancestors’ individualistic greed, which debased the futures of unborn generations. Subsequently, the Pasho guardianship of future generations resonates strongly with the rhetoric of worldwide school and student climate strikes—such as Fridays For Future—which have drawn significant attention to environmental issues over the last two years. As Greta Thunberg exhorts, “we will never stop fighting for this planet, and for ourselves, our futures, and for the futures of our children and our grandchildren” (2019, p. 53). As she emphasizes, humans have a tremendous responsibility to future generations to enact sustainable economies. As in “The Pasho,” these auspicious school strikes have transformed bodies into powerful political agents, and demonstrated that, in a profound role reversal, the young are far more prepared to act as conscientious custodians of Earth than their elders have ever been.

Meanwhile, children are implicated in the novel bodily economy of “Pop Squad” in a drastically different manner than in “The Pasho.” Set in a future Canada which is almost entirely underwater as a result of drastic sea level increases, the human population of “Pop Squad” has become immortal following the advent of the drug, rejoy. As a summary measure to prevent overpopulation, procreation has been outlawed. Children are consequently illegal, and they are methodically exterminated by licensed pop squad agents. The culling of infants ensures that the adult members of the story’s stationary society have sufficient means of nutrition and space to live comfortably without encountering resource scarcity. Their

institutionalized practice of annihilating life that they deem dispensable draws a conspicuous parallel with the widespread maceration of infant chickens in our reality, which proves cost-effective since male chickens “do not have any use in poultry production” and so “are culled after hatching” (Reithmayer, 2019, p. 4539). In either instance, an anthropocentric hierarchization of life leads to the normalized slaughter of organisms considered surplus to requirements. The declarative tone of one passage where the first person narrator of “Pop Squad” exterminates three children at point blank range is conspicuous:

Their heads kick back in successive jerks, bang bang bang down the line, holes appearing on their foreheads like paint and their brains spattering out the back. Their bodies flip and skid on the black mirror floor. They land in jumbled piles of misaligned limbs. (p. 139)

His job is entirely commonplace to him, so much so that his “brain takes a vacation and” his “hands do the work” reflexively (p. 141). Although he finds it “depressing to come into these scenes” (p. 137), that is only because he finds it repulsive to come into contact with the pregnant mothers. As when he remarks “it’s against procedure to waste the kid in front of the mother” (p. 148), the gruesome viscera of the practice are rendered in detached, quotidian terms. Bacigalupi thus implies that the narrator is as completely habituated to the regime as we are to our own everyday lives—despite the damage we do daily to our planet, and to its future inhabitants. As readers may infer from the numerous passages of the text which depict the slaughter of children in explicit terms, by perpetuating environmentally exploitative economies, contemporary societies are killing their children, too, just indirectly. Just as the society of “Pop Squad” has killed the future of its children in ecological terms, so it continues to affect their murder in very literal terms as well.

These infant corpses subsequently “end up as compost” (p. 147)—a perverse parody of the ineffectuality of contemporary recycling initiatives in societies governed by consumerist ideologies. As in our

## No Windup, continued

own societies, consumerist lifestyles persist despite the rising seas; the text's characters are significantly more concerned with "color coordinating and classy appliances" (p. 139) than with the tide which threatens to swallow their cities. Pointedly, their society has only implemented climate change "mitigation" (p. 142) measures, rather than undergoing systemic economic change. Yet, since the predilections of the Anthropocene lie beyond human control, they have been forced to adopt a novel bodily economy through necessity in the form of wholesale infanticide. Their rampant materialism and individualistic ideologies directly necessitate their policies of extermination, this violence facilitating their conversion into immortal consumers. As Bacigalupi suggests, the willful ignorance of capitalist regimes is written violently upon the bodies of their dispossessed.

In stark contrast with the novel bodily economy of "The Pasho," its hegemonic counterpart in "Pop Squad" is a resounding failure; it repudiates phenomenological accounts of embodiment, and hence occludes the primacy of lived bodily experience. Poignantly, however, the physicality of the text's fugitive mothers and their children is evoked consummately by Bacigalupi's rendering of them in haptic, olfactory, and auditory terms. As the narrator's senses are simultaneously affronted by the "shit smell," the "piercing shrieks," and the "cereal crunch" beneath his feet, the submersion of his perceptions within the extremely visceral quality of the scene emphasizes that the extermination of these infant bodies is fundamentally implicated in his own bodily existence (p. 138). Bacigalupi's rendering of the parents who choose to sacrifice their own immortality to give birth to "dumb terminal kids" (p. 147) in explicitly visceral terms therefore comprises an advocacy of their resistance to the abhorrent hegemonic bodily economy of the story.

Likewise, the narrator soon begins to notice that the "babies are everywhere, popping up like toadstools after rain" (p. 154). The naturalistic quality of this metaphor underscores the text's critique of anthropocentrism. Although the humans of "Pop Squad" are entirely absorbed with their own lives, the text con-

trastingly demonstrates the incontrovertible embeddedness of humans in nature. Despite it literally killing them, significant numbers of men and women in the text's society choose to quit rejuv treatments in order to procreate, and "so two people kill themselves for a kid" (p. 159) time and time again.

As Bacigalupi implies, their collectivist rebellion comprises a far more naturalistic bodily economy. Although the narrator has been unable to sustain an erection during foreplay with his immortal partner, while in the presence of a pregnant mother soon after, he "can barely sit because [his] pants are so tight" (p. 157). "Pop Squad" thus posits the pregnant body and that of the child as modes of resistance against the neoliberal ideologies of its diegetic world and evinces a firm belief in the redemptive possibilities enclosed by natural cycles of life. Despite their futuristic settings, the underlying ruminations of "The Pasho" and "Pop Squad" on the generational violence of capitalist systems succeed in creatively making the impact of economic policy in the Anthropocene resonant with readers.

### *The Windup Girl*

The long-term impact of short-sighted, contemporary economic policies also dominate Bacigalupi's debut novel, *The Windup Girl*. Nevertheless, as Heather J. Hicks asserts, in post-apocalyptic novels, rather than "being framed exclusively as the origin of environmental destruction and rationalized terror, modernity also now seems a potential basis of environmental solutions and a bulwark against the voracious energies of neoliberal capital" (2016, p. 171). Such a tense oscillation—between the entrenched economic systems of capitalism and new bodily economies—pervades every aspect of *The Windup Girl*. The hegemonic bodily economy of the novel's future Thailand is set in opposition to our familiar GDP-led economic policies—the collapse of which has precipitated a global economic contraction—but the country nevertheless struggles to evade the enduring thrall of capitalist dogma.

## No Windup, continued

Their ecologically conscious bodily economy centers upon the biological basis of calories and is underpinned by an understanding that even “*the richest and the most powerful are only meat for cheshires in the end. We are all nothing but walking corpses and to forget it is folly*” (Bacigalupi, 2010, p. 396. Original emphasis). One important principle of the Thai calorie economy is a post-anthropocentric understanding that human bodies are not sacred, but part of a circular and profoundly interrelated ecosystem. This economic transformation proves a workably straightforward solution to resource scarcity:

Yellow cards crowd around the tower entrances, Malayan Chinese men and women trying to look hopeful as they wait for labor opportunities that have already faded in the heat of the afternoon. And yet they still try to look vital, try to show their bony limbs have calories to spare, if only someone will allow them to burn. (p. 193)

The cost of labor is now measured by the “joules” (p. 142) it expends, providing a direct means of recompense for workers’ labor—a more logical means of payment, oriented towards subsistence, as opposed to profit. By stressing the primacy of the connection between sustenance and labor, the calorie economy discourages dogmas of “Money at any cost. Wealth at any price” (p. 182). It is an appropriate economic paradigm for the period of Contraction that has resulted from the ill effects of climate change, fossil fuel scarcity, and unremitting waves of genetically engineered epidemics. In place of the investment and loan of capital, amphetamine sticks are used by workers “to keep working, to burn calories that they do not have” (p. 154), their cost repaid after the investment has been earned back. Accordingly, the priorities of the novel’s characters have been distilled down to the fundamentals of subsistence, and hence, although monetary considerations are still important, they are no longer an economic object in and of themselves.

As a result of fossil fuel scarcity, calories are now the direct energy source for the few utile technological devices. For example, if Thai citizens wish to ride

a powered boat, they must hand crank the engine themselves; for the electrical supply of their emergency command center, the Trade Ministry employs “megodont teams in the basement” (p. 434). Technology now provides no easy solutions, as its use always requires either the user’s labor or their purchase of outsourced labor. When a worker demonstrates the process of winding energy into a kink-spring for storage, the tactility of his labor is patent; he “leans against the pedals” and his exertion dampens his “brow” with sweat (p. 200). As this implies, the inexorable directness imparted to economic transactions ensures that all labor and its products principally remain bodily phenomena. By fixating on this biological dynamic, the Thai Kingdom obviates the expansionist ideologies which precipitated the Contraction.

When the entrepreneur Hock Seng visits an unusually affluent man, he is treated to the absurd extravagance of transportation via elevator. This familiar article of technology must, however, be powered by a work group of “ballast men” (p. 194), who have been employed to counterweight the lift. They will be paid for the energy they have burned over the course of the day—running back to their starting position at the top of the shaft—with sufficient currency to purchase replacement calories. Fittingly, Seng is only granted this prestigious extravagance to encourage him to supply the Dung Lord with a remarkably efficient prototype kink-spring, capable of storing a “gigajoule” (p. 197) of energy. As both parties acutely understand, this immensely innovative technological development holds the potential to reverse the Thai Kingdom’s fortunes. Since the Kingdom’s prosperity is closely tied to its populace’s bodily productivity, and its ability to stockpile its labor output, the calorie economy demands that humans are conscious of their positionality within the planet’s ecologies, and greatly streamlines the complex outsourcings of labor characteristic of capitalist economic systems.

In a world of such acute scarcity, their bodies are all that the Thai people have left, and so they readily comprehend the need to act in a symbiotic manner with their planet’s ecologies. Hence, when the city’s

## No Windup, continued

methane supply is temporarily disconnected, the “strange silence” that “has settled over the city” (p. 469) suggests that all of its citizens understand the severity of the situation with absolute clarity. They cannot cook without the methane supply, and so the city will starve unless the supply is reopened. As Nancy Tuana robustly illustrates, “corporate wealth was in turn grounded in both racism and environmental exploitation”, and hence, “No study of the causes of climate change that overlooks the complexity of such lineages will fully understand what is needed for climate justice” (2019, p. 18). By demonstrating the racial dimensions of climate adaptation and the economic role of bodily precarity in the extensive perpetuation of social inequalities, Bacigalupi’s novel provokes a recognition that “sedimented, systematic beliefs and dispositions regarding racial superiority are at the heart of decisions about whose lives and lifeways are worth protecting and whose are expendable” (2019, p. 10) in the Anthropocene.

Likewise, when the undercover AgriGen agent Anderson “wakes with a start” one morning, his abrupt awakening occurs because the “crank fan has stopped, run out of joules. He’s covered in sweat” (p. 378). Even for wealthy visitors, there is an inescapably direct relation between the amount of energy that individual bodies expend, and their level of removal from the harsh realities of life in the heat-scarred cityscape of Bangkok. Likewise, the labor contributions that outsiders make to the perseverance of the city are enduringly inscribed upon their bodies:

Tattooed farmers make wais of respect as Kanya cycles past. By the stamps on their arms, most of them have already done corvée labor for the year. A few others are marked for the start of the rainy season when they will be required to come to the city and shore up its dikes for the deluge. (p. 340)

Their debt of labor leaves them inscribed with a permanent artifact of Bangkok, which rewards them for their good labor. It also serves, however, as a means of identification should their outsourced labor on the city’s flood defenses prove deficient. In either case,

the tattoos implicate them unconditionally in the city’s project of survival. Patently, the implications of Bangkok’s calorie economy extend beyond its own borders, and hence, these corvée labor tattoos gesture towards the Kingdom’s novel economic paradigm on a scale which exceeds the text’s immediate setting.

Nonetheless, Western companies such as AgriGen wait on the periphery of Bangkok “amid stockpiles of calories, all of them waiting patiently for a crop failure or plague to beat aside the Kingdom’s trade barriers” (p. 151). It is necessary that the Thai calorie economy model continues to succeed in praxis, or else the GDP-led ideologies of the West will begin to make inroads into the Kingdom again. In their own words, all that the Americans waiting patiently outside Thailand are “interested in is a free market” (p. 213), and hence, they desire only to affect a return to the same neoliberal dogma that has already precipitated a blanket collapse of global economies once.

Plainly, it is non-Western nations that have had the ingenuity to conceptualise and implement such novel bodily economies, capable of revolutionising the economic structures that govern the world. Just as the Environment Ministry must labor to engineer resistance to epidemics such as “H7V9; cibiscosis111.b, c, d; *fa’ gan fringe*” (p. 174), the Thai people on aggregate must constantly labor to remain self-sufficient, in order to maintain the integrity of their Kingdom’s independent economy.

This is no simple task, particularly as Western “money comes surging in as strong and deep as the ocean against the seawalls” (p. 244), attempting to persuade the Kingdom to return to a free market model and re-open its borders to trade. Contrastingly, these Western companies’ concerns about the establishment of trade relations with Thailand are by no degree existential, but rather, revolve around whether “the finance people will fight” and whether a deal would “undercut profits” (p. 334). Their offers of assistance are not born of necessity, but of contemptuousness for the calorie economics that the Thai people understand first-hand. However, since

## No Windup continued

the waiting Western companies represent an offer to the Kingdom of “calorie security that hasn’t been enjoyed since the Expansion” (p. 329), their proffered trade opportunities prove too tempting to resist indefinitely.

### *The Water Knife*

Antithetically, the characters of *The Water Knife*—set in a future Phoenix affected by endemic water scarcity—are guided by no such ecological acumen. The economic model of the text’s America is comprehensively centered upon water, to the extent that Western states openly and violently compete between themselves to attain water rights to the Colorado River:

If Phoenix shows up in court, waving these senior Pima water rights, everything changes. For everyone. Phoenix could have the Bureau of Reclamation drain Lake Mead. Send all the water down to Lake Havasu for Phoenix’s personal use. They could make Los Angeles and San Diego stop pumping. Or they could sell the water off to the highest bidder. They could build a coalition against California, keep all the water in the Upper Basin States. (p. 284)

In the world of the text, any state capable of producing water rights superior to those of neighbouring states can annex aquatic assets “worth billions” (p. 317). Hence, the consolidation of aquatic resources has become far more meaningful than the pursuit of capital. As a result of this comprehensive shift in the country’s economic ambitions, states have become adversaries, readily willing to enact suffering on rival populaces when doing so helps to preserve their own. For all Western states, the Colorado River is a precarious “lifeline, always threatened and always vulnerable” (p. 9) to drying up—its resources are unable to provide sustenance for all of their populations.

Resultantly, fluid metaphors permeate the vernacular of their populaces, making the image of water eerily omnipresent in light of its literal scarcity. A per-

son inexperienced in the everyday violence of life in Phoenix is either “wet and soft” (p. 78), or capable only of seeing the world “cloudy” (p. 51). Meanwhile, tenacious survivors are “icy” (p. 196), and it is an erudite accomplishment to see “the world clear” (p. 157) in all of its horrific corporeality. Even when they are ostensibly discussing other matters, the high prevalence of water metaphors in casual conversations remind residents of Western states that all matters pertain to that necessary, yet now rare, means of sustenance.

As the evolution of their language implies, the brutal realities of their new bodily economy divorce them so far from our own time—characterised by environmental apathy and ignorance—that the vocabularies of the two eras are fast becoming mutually exclusive. The text’s novel bodily economy is accordingly a mindset as much as it is a physical practice, a new means of conceptualizing the positionality of the human body in an ecologically devastated world, and a radical rewriting of our own entirely insufficient frames of ecological reference.

In this light, Bacigalupi specifically emphasizes just how absolutely crucial water is to all aspects of human existence. In their transformed Phoenix, state-funded toilet cubicles roam the streets perpetually, “ferrying piss and shit into remaining water-treatment plants, trying to keep disease down with functioning sewer lines gone” (p. 123). Likewise, sweat now entirely encompasses “a body’s history, compressed into jewels” (p. 1), a new bodily means of status, and the only one which ultimately matters in this parched landscape. The history and personal wealth of any individual is inconsequential in comparison to the rate at which they are sweating their precious reserves of water away. Whoever endeavours to stay hydrated has “to sweat for it” (p. 89) first, and this severe feedback loop of “borrowed time” (p. 154) accordingly comprises the basis of a bodily economy into which Phoenix’s citizens are invariably interpellated. Every individual must recycle every drop of their body’s fluid that they can:

## No Windup, continued

Maria closed the door and looped string over a nail to lock it. She crouched over the trench, wrinkling her nose at the stink, opened the ClearSacs, and peed into it. When she was finished, she hung the sac on a nail, then finished her business, wiping with ragged squares of newsprint that she and Sarah had torn from *Río de Sangre*. She pulled up her shorts and hurried out, carrying the half-full ClearSacs, glad to be back out in dawn's open smoky air again. (p. 91)

Hence, the most ubiquitous novel technology of the text's speculative fiction landscape is a completely banal one, which filters the toxins out of urine in order to make it drinkable. Plainly, the only technologies worthy of development in the text's diegetic world are those that are comprehensively bodily. Intriguingly, Hicks argues that Bacigalupi's post-apocalyptic landscapes espouse "a forward-looking perspective that understands [Anthropogenic life] as an inevitable future which will call on technological innovation and new social formations" (2016, p. 159).

In contrast to Hicks' assertion, technological innovations in *The Water Knife* only ever supplement the bodily economies of its diegetic world, and they thus play a comparatively auxiliary role in its characters' adaptation to their Anthropogenic environment. Demonstrably, the transition into this new economic paradigm was a tangible culture shock; people "started out squeamish about ClearSacs, but eventually even the fussiest were grateful for them" (p. 360). As Bacigalupi insinuates, although the major economic recalibrations necessary to survive in the Anthropocene will require us to become attuned to significantly abnormal configurations of embodied life, economic and lifestyle adaptation are inevitable if our species is to survive at all.

Bacigalupi thus implicates the Central Arizona Project—"three hundred miles of canal system, all taking water to a burned-out city in the middle of a blazing desert" (p. 431)—in his text in order to demonstrate the results of our contemporary hubris. As a result of their anthropocentric presumptions, our contemporary

economic policies have been responsible for engendering the violent social collapse of the text's future Phoenix. Implicated in *The Water Knife* in this manner, the CAP is symbolic of the vast amount of hubris that our societies are built upon; its figuration emphasises that our ignorance of the embeddedness of human bodies in our planet's ecologies will inevitably prove fatal. Bacigalupi takes Mark Reisner's assertion that such ill-conceived American projects are "a vandalization of both our natural heritage and our economic future," for which "the reckoning has not even begun" (1993, p. 485) as a means of demonstrating that the text's parched hellscape is an environment that is rapidly "becoming real" (Bacigalupi, 2016, p. 449).

In Bacigalupi's rendering of the collapse of the Blue Mesa Dam following Californian sabotage, "people were specks on the edges of the dam, all fleeing. The scale was almost too big to understand, the people tiny beside the jetting waters that blasted through the dam under pressure" (p. 226). Any anthropocentric delusions held by the characters who witness this natural manifestation of such raw power are stripped away in a moment. The transient value of individual human bodies becomes utterly plain in the face of the enduring puissance of water.

One pervasive aspect of Phoenix life in the text is the body *lotería*; a daily sweepstakes that allows residents to gamble upon the city's homicide rate that day, in which "Over One-fifty" (p. 165) is a perfectly reasonable bet. As this macabre form of entertainment makes plain, the only viable way for individuals to profit within the stark realities of the city's novel bodily economy is upon the misfortunes of others. Yet, as Bacigalupi implies, his readers profit by similar means: we all-but sacrifice the bodies of our descendants by continuing to wreak environmental destruction upon the Earth for our own short-term gain. To the same extent, when colonists "set out to make the future of the American West secure; what we really did was make ourselves rich and our descendants insecure" (Reisner, 1993, p. 486). Bacigalupi's analogy is clear. As our own economic systems do, Phoenix allows only a few human bodies to profit from the

## No Windup, continued

misfortunes of a multitude of unseen others. The loss of future generations through our selfishness is also literalized in the text, since conditions have become so bad that many “people just gave up and sold their children” (p. 170).

In the text’s timeframe, there is no escape from the Anthropogenic milieu of the city, since the very air of Phoenix is heavy with the “char of faraway forest fires and the dust of dead farms” (p. 183). Hence, its populace must constantly inhale the effects of theirs and their ancestors’ disregard for the Earth, to the sobering extent that human environmental failures have become physicalized pollutants of the human body. In harsh contrast, the “arcologies” of the novel are populated by “Ferns and waterfalls and coffee shops” (p. 7) and are thus inordinately desirable residences. For the dispossessed, the towering arcologies are impenetrable, almost mythical places where the fluid and atmospheric concerns etched into the fabric of their daily lives in Phoenix would be erased in a moment, if only they were able to gain residence there. Thus, the desire to attain “housing permits” (p. 4) within an arcology is the impetus that keeps many of the city’s residents laboring. It is precisely this desire for the alleviation of the incessant precarity that they experience on a daily basis that prevents the complete collapse of Phoenix’s stagnant economy.

Nevertheless, as a direct result of their exacerbation of extant class inequalities, the discrete environs of the arcologies demonstrate the principles of an incredibly successful bodily economy in miniature. Since each arcology is exhaustively defended by armed “security guards” (p. 48), its abundant water supply belongs to a closed ecology which is inaccessible to outsiders. The principles of their design are conspicuously redolent of Raworth’s Doughnut model of economics, which proposes that the linear processes which underpin industrial economies “are fundamentally flawed because [they run] counter to the living world, which thrives by continually recycling life’s building blocks” (2018, p. 212) in natural cycles. Correspondingly, each arcology is capable of running “on its own water for up to three months at a stretch without even having

to dip into the Colorado River” (p. 62), by running sewage water “through filters and mushrooms and reeds and... into lily ponds and carp farms and snail beds,” so that “by the time it comes out the other end, that water, it’s cleaner than what they pump up from underground” (p. 111). Irrefutably, the non-anthropocentric bodily economy that the arcologies comprise is far more successful than the anthropocentric ones found elsewhere in the text, and elsewhere in Bacigalupi’s oeuvre.

### *The Children of Khaim*

Although Bacigalupi’s novella, *The Children of Khaim*, is one of his less frequent forays into the genre of fantasy, it provides just as significant a rumination on the Anthropocene epoch as any of his science fiction works do. As one quarter of the jointly authored collection *The Tangled Lands*, the novella reprises the diegetic world collaboratively established within Bacigalupi’s 2010 novella *The Alchemist*, and within Tobias S. Buckell’s novellas *The Executioness* and *The Blacksmith’s Daughter*. *Khaim*’s post-apocalyptic landscape centres upon the eponymous Khaim, a city perpetually under threat of being swallowed by bramble. A highly poisonous and inordinately proliferative weed, bramble sprouts whenever Khaim’s populace uses magic, whereupon it manifests at random in locations nearby. Since those pricked by the weed’s thorns lapse into a permanent state of living death, there is a direct causal effect between the use of magic and the growth of bramble. As the dangers of bramble are not necessarily visited on its perpetrator, magic therefore comprises an allegory for carbon footprints.

Specifically, the wealthy’s continued use of magic is “emblematic of the very system of neoliberal economic and social regulation from which the apocalypse might have” otherwise freed the citizens of Khaim (Hicks, 2016, p. 127). By policing magic in public, and continuing to use it in private, Khaim’s wealthy have reinstated the social order following the apocalyptic fall of Jhandpara by simply substituting magic for money as the prime commodity of their economy. Nevertheless, as a substitute currency, magic is inherently un-

## No Windup, continued

attractive to hoard; since its use can be detected and punished, it bears “demurrage, a small fee incurred for holding money, so that it tends to lose rather than gain in value the longer it is held” (Raworth, 2018, p. 274). Thus, since there is no longer any incentive to hoard the currency, magic gestures towards a viable alternate economic model. Nevertheless, the other novel economic model explicated within the novella is just as significant, and vehemently bodily.

After watching his sister Rain succumb to bramble kiss while clearing a thicket of bramble, the orphan Mop spends the remainder of the text’s narrative attempting first to revive her, and, failing that, to merely preserve her body. He wonders at every moment whether he should simply euthanize her comatose body “before dogs and men come sniffing for her” (p. 164), and the latter danger proves to be the most significant by far. Lee Edelman argues that contemporary societies position “the Child as the emblem of futurity’s unquestioned value” (2004, p. 4), and he proposes that this figuration is so culturally inscribed that it shimmers “with the iridescent promise of Noah’s rainbow, serving like the rainbow as the pledge of a covenant that shields us against the persistent threat of apocalypse now—or later” (2004, p. 18). Edelman terms this pervasive ideology “reproductive futurity,” and his theoretical apparatus provides a pragmatic means of interpreting Mop’s and Rain’s ordeal in *The Children of Khaim*. Bacigalupi precisely subverts the trope of the invulnerable child throughout the novella.<sup>3</sup>

Mop is urged on numerous occasions to “sell the sleeping” (p. 164) bramble body that he assiduously attempts to protect, and this recurrent narrative thread is suggestive of the odious bodily economy that the text’s diegetic world centres upon. Although murals throughout the city depict images of “children protected by the alertness of the Mayor” (p. 170), that ideological fantasy could not be further from the truth, as Bacigalupi’s own successive images of Khaim’s more covert economy underscores. As gradually becomes apparent in increasingly graphic terms, Rain’s

new positionality as a bramble body—and in particular, a prepubescent bramble body—means that she has become a valuable sexual commodity. Pleasure houses throughout the city are frequented by men who use bramble bodies to enact their sexual desires and fantasies, since these comatose subjects cannot “protest their worst advances” (p. 173).

When Mop visits one such pleasure house in an attempt to locate and retrieve his sister’s body, the depravity of the establishment is palpable. Their stockpile of bramble bodies is advertised as “your hungers, unbounded” (p. 181), and is voluminous:

The dolls lay stacked upon the floor, piled by age and size. Girls and women, nude and clothed. Wealthy and poor. Boys and men on another wall. Tangled stacks and mounds of them, splayed and discarded. (p. 182)

This menagerie of living sex toys, it transpires, comprises the sinister backbone of Khaim’s economy. In a conspicuous parallel with our own world, Khaim’s default routes of economic “prosperity” are those which are deeply detrimental to its environment, and those whose effects are wrought in turn upon its own populace’s bodies. In Khaim’s post-apocalyptic environ, these bramble bodies, heaped in “piles and drifts” (p. 184), form a damning metaphor for the willingness, through studied ignorance, of capitalist economic systems to feed on the ashes of their own destruction. This metaphorical feeding is literalized in some instances, as a number of Khaim’s men do not merely mutilate their living sex dolls with “curved blades,” but additionally, often keep themselves “fed” upon the entirely pliant flesh they have paid to abuse (p. 184).

By Edelman’s logic, even as it becomes less and less likely that Mop can succeed in even protecting Rain, the reader is trained to expect a *deus ex machina* ending to the novella that will see her miraculously revived. Bacigalupi, however, eventually confirms that the ideologies of our own world have no sway in Khaim’s stark Anthropogenic landscape. Despite her and her brother’s failing fortunes, Rain had kept hold

## No Windup, continued

of a comb, her “last treasured luxury from a time when their lives had been soft and comfortable, held to her, even as their lives fell to rags” (pp. 193-194). Symbolically, it is this item—her last vestige of innocence in an increasingly grotesque world—which Mop uses to repeatedly impale and murder her eventual assailant, immediately after the last signifier of her childhood purity has been perverted. When Mop stares at his sister’s bramble body, lying “like a broken doll” with the “linemaster’s body draped naked across her,” Bacigalupi employs the image of Rain’s perverted childhood innocence to demonstrate the insufficiency of familiar human referents in an increasingly Anthropogenic context (p. 203).

Accordingly, bramble vine is seemingly sentient, displaying tropisms such as “sniffing the air” (p. 198), and “slithering slowly” (p. 199) to predate upon magic users. Mop, in one instance, watches as “a great bramble bough eased in through a window, blotting out the moon, a branching trunk as thick as a man’s waist” (p. 199), seeking out his body in order to feast upon the residue of magic he has recently used. Khaim’s humans are thus predated upon by their Anthropogenic environment; a devastated nature repaying in kind the casual violence wrought upon it by human life. Although there can plainly be no return to the times before Khaim “was threatened so greatly by bramble” (p. 187), the ignorance of those times is nevertheless writ large on every aspect of the city’s present. In a manner pointedly redolent of locked in global warming, the lives of their ancestors who used magic casually weigh heavily upon the citizens of the present day.

### Conclusion

As this paper has demonstrated, Bacigalupi’s oeuvre implores the necessity and urgency of systemic economic change. A well-publicized statistic reveals that approximately half of all carbon dioxide emissions “can be attributed to the richest 10% of people around the world,” and, furthermore, that the “average footprint of the richest 1% of people globally could be 175 times that of the poorest 10%” (Gore, 2015). Nev-

ertheless, the poorest 10% of the Earth’s population “live overwhelmingly in the countries most vulnerable to climate change” (Ibid). Accurate or otherwise, this statistic only provides ammunition for the entrenched interests of the wealthy, who will never be motivated to solve the climate crisis while they continue to profit from economic exploitation born of ecologically callous economic systems. Systemic economic change is the only solution to the Anthropocene.

Likewise, this cross-section of Bacigalupi’s works prompts us to recall that no matter what Anthropogenic future we arrive at, its ravages will be written on our bodies. Collectively, Bacigalupi’s novel bodily economies comprise a statement that our bodies are both our best means of comprehending the Anthropocene epoch, and the medium on which its traumas will inevitably be written. Since “the solution to global warming is not to fix the world, it is to fix ourselves” (Klein, 2015, p. 279), humans have risen to the challenge with varying degrees of success in Bacigalupi’s post-capitalist and post-apocalyptic diegetic worlds. The extent to which Bacigalupi’s successive fictions will continue to explore the quiddity of bodily economies remains to be determined, and equally, it remains to be determined whether the world’s economic systems will change in response to, or be forcibly reshaped by, the Anthropocene.

### Notes

<sup>1</sup> For definitions of the Anthropocene, see Crutzen & Stoermer, 2000, and Hay, 2019.

<sup>2</sup> For a critical appraisal of the environmental credentials of Bacigalupi’s Young Adult fiction, see Schmeink, 2018.

<sup>3</sup> As he also does in “Pop Squad.”

## No Windup, continued

## References

- Bacigalupi, P. (2010). The Pasho. In P. Bacigalupi. *Pump Six and Other Stories* (pp. 69-92). Night Shade Books.
- Bacigalupi, P. (2010). Pop Squad. In P. Bacigalupi. *Pump Six and Other Stories* (pp. 137-161). Night Shade Books.
- Bacigalupi, P. (2010). *The Windup Girl*. Orbit.
- Bacigalupi, P. (2016). *The Water Knife*. Orbit.
- Bacigalupi, P. (2017, January 31). I wrote The Water Knife because I was concerned about America's willingness to pretend that climate change wasn't real, and wasn't a pressing problem for us [Facebook post]. Retrieved February 11, 2020, from <https://www.facebook.com/PaoloBAuthor/posts/10154946832703904>
- Bacigalupi, P. (2018). *The Children of Khaim*. In P. Bacigalupi & T. S. Buckell. *The Tangled Lands* (pp. 151-208). Head of Zeus.
- Barron, L. (2017). *Tattoo Culture: Theory and Contemporary Contexts*. Rowman & Littlefield.
- Crutzen, P. J., & Stoermer, E. F. (2000). The 'Anthropocene'. *IGBP Newsletter*, 41, 17-18.
- Edelman, L. (2004). *No Future: Queer Theory and the Death Drive*. Duke University Press.
- Ghosh, A. (2016). *The Great Derangement: Climate Change and the Unthinkable*. The University of Chicago Press.
- Gore, T. (2015, December 2). Extreme Carbon Inequality: Why the Paris climate deal must put the poorest, lowest emitting and most vulnerable people first. *Oxfam*. Retrieved from [https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/file\\_attachments/mb-extreme-carbon-inequality-021215-en.pdf](https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/file_attachments/mb-extreme-carbon-inequality-021215-en.pdf)
- Hay, J. (2019). (Post)human Temporalities: Science Fiction in the Anthropocene. *KronoScope: Journal for the Study of Time*, 19(2), 130-152. doi: 10.1163/15685241-12341440
- Hicks, H. J. (2016). *The Post-Apocalyptic Novel in the Twenty-First Century: Modernity Beyond Salvage*. Palgrave Macmillan.
- Klein, N. (2015). *This Changes Everything: Capitalism vs. the Climate*. Penguin.
- Kolbert, E. (2014). *The Sixth Extinction: An Unnatural History*. Bloomsbury.
- Raworth, K. (2018). *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*. Penguin.
- Rees, E. (2017). Varieties of Embodiment and 'Corporeal Style.' In E. Rees (Ed.). *Talking Bodies: Interdisciplinary Perspectives on Embodiment, Gender and Identity* (pp. 1-15). Palgrave Macmillan.
- Reisner, M. (1993). *Cadillac Desert: The American West and Its Disappearing Water*. Penguin.
- Reithmayer, C., & Mußhoff, O. (2019). Consumer preferences for alternatives to chick culling in Germany. *Poultry Science*, 98 (10), 4539-4548. doi: 10.3382/ps/pez272
- Schmeink, L. (2018). Coming of Age and the Other: Critical Posthumanism in Paolo Bacigalupi's *Ship Breaker* and *The Drowned Cities*. In A. Tarr and D.R. White (Eds.). *Posthumanism in Young Adult Fiction: Finding Humanity in a Posthuman World* (pp. 159-78). University Press of Mississippi.
- Thunberg, G. (2019). *No One is Too Small to Make a Difference*. Penguin.
- Tuana, N. (2019). Climate Apartheid: The Forgetting of Race in the Anthropocene. *Critical Philosophy of Race*, 7(1), 1-31. doi: 10.5325/critphil-race.7.1.0001
- Wallace-Wells, D. (2019). *The Uninhabitable Earth: A Story of the Future*. Allen Lane.

## Humans as Ecological Actors in Post-Apocalyptic Literature

Octavia Cade, Ph.D. & Meryl Stenhouse, Ph.D.

**Abstract:** Post apocalyptic literature is frequently environmental in nature, or explores significant ecological impacts. These affect the surviving human and nonhuman populations, and are characterised by scale. While some of the apocalypses of science fiction literature are limited to the destruction of a single species—as occurs, for instance, in P.D. James’ *The Children of Men*—others, such as Cormac McCarthy’s *The Road*, illustrate an environmental collapse that destroys entire ecosystems. Human response to apocalypse occurs on both an individual and a communal level, but that response, within the literature, tends to focus more often on social or economic consequences. However, humankind’s ability to further shape its natural environment tends to be heightened in environmental apocalypse, as compromised ecologies become ever more vulnerable to human activity. The human ability to function as ecological actors, as shapers of surviving ecologies, is therefore not only a fundamental—if frequently underexplored—part of that narrative, but it also indicates potential pathways for real-life response to ecological apocalypse. Notable in the post-apocalyptic narratives explored in this paper is the way that the impact of human behaviour on environment is dependent on apocalyptic scale. The construction of *refugia*, the realignment of surviving communities to sustainable practices, and the increasingly destructive human presence on ecologies incapable of reclamation contrasts with, for example, the increasing nonhuman biodiversity that can follow the widespread destruction of the human population.

**Keywords:** ecological actors; *The Children of Men*; *The Road*, *The Day of the Triffids*; refugia

Post-apocalyptic fiction imagines a future where humanity’s survival is threatened by ecological collapse. By examining human relationships with the post-apocalyptic environment, we explore the concept of humans as ecological actors, able to impact—either positively or negatively—the natural world in the wake of disaster. This impact is affected by both the scale of the apocalypse and the role that humans choose to play in this new world. Does that role differ from ecological action *pre*-apocalypse and what does that say about how we envision, through post-apocalypse, our possible future relationships with the environment?

The type of apocalypse depicted in any given work is the deciding factor in this relationship. A nuclear war, for instance, severely affects entire ecosystems, and so the interaction between surviving organisms is particularly marked. In very quiet, almost localised apocalypses, however, the scope of that interaction is minimal. Consider *The Children of Men* by P.D. James,

which frames its apocalypse within the context of human infertility. “Overnight, it seemed, the human race had lost its power to breed,” a phenomenon which could almost be considered localised if restriction to a single species counts as localisation (James, 2006, p. 9). Yet even here, the consequences of such a restriction are not insignificant: although mass infertility affects the human species alone, the disappearance within several generations of the global apex predator is bound to have repercussions for the surviving species. Sudden, marked decreases in pollution, in agriculture, and the oncoming cessation of all anthropological interaction with the environment can have no other result. But because this apocalyptic infertility is so species-specific, and so relatively slow, it is possible for many individuals to go on living in much the same manner as before. In fact, James is so focused on the social and political ramifications of the end of the species that she spends little to no time perceiving the surviving humans as ecological

## Humans as Ecological Actors, continued

actors, capable of significant alterations to, and interactions with, their own environment.

The sole example of ecological action in *The Children of Men* is concerned with leisure. This differentiates the novel from much of post-apocalyptic literature in that the resources necessary for survival—food, clean water, adequate shelter—are easily obtained. Survival, such as it can ever be in such circumstances, is primarily cultural. The contents of museums and galleries are stored safely away in case aliens ever arrive on Earth to explore the remains of a long dead civilisation, but the remainder of the population is concerned primarily with an easy senescence. Why spend the last decades of the apocalypse in conflict and uprising when golf can while away the remaining hours? Productive and entertaining leisure is thus seen as a means of mitigating the social upheaval of apocalypse, and the frantic construction of ever-more complicated golfing greens a social good. The protagonist, Theo, notes that if human reproduction had continued uninterrupted, “conservationists would protest at the acres of countryside, some of it our most beautiful, which have been distorted and rearranged” in the service of golf, but this is a throw-away detail (James, 2006, p. 8). More telling is a priest’s hysterical reaction when a deer wanders into his church: “The chaplain had turned to Theo, tears streaming down his face. ‘Christ, why can’t they wait? Bloody animals. They’ll have it all soon enough. Why can’t they wait?’” (James, 2006, p. 41).

Notably, this awareness of nature’s indifference is also depicted in John Wyndham’s novel *The Day of the Triffids*. After humans are almost universally blinded, a state which is acknowledged within the text as inevitably leading to an apocalyptic loss of population (an apocalypse that, as in *The Children of Men*, is restricted to a single species), the focus shifts to triffids. Previously a vegetative curiosity, the triffids’ ability to hunt and kill blinded prey points to a different world—one which alters existing ecologies by replacing one apex predator with another. Stock describes triffids as a “biological competitor” with hu-

mans, but the outcome of this contest is the realisation that humans are biological competitors as well, and with more than just triffids (2015, p. 446). With the removal of the human population, other species fill the vacant ecological niches that humans were previously more effective at exploiting. The simple observation of roads overgrown with weeds, of plants encroaching on towns, of human artefacts such as houses falling to decay, eventually being covered over with trees and flowers, is a pointed one. “It’s as if everything were breaking out,” Josella comments, recalling that even a few years before apocalypse, complaints about how growing towns were ruining the surrounding countryside were rife. This leads to the perception of ecology “Rejoicing that we’re finished, and that it’s free to go its own way” (Wyndham, 1975, p. 242). That is, of course, an anthropomorphic assertion, but it is one that implicitly places human as ecological actors and acknowledges, therefore, the environmental effects of their absence. “Nature has been through worse losses before, and refilled empty niches,” comments Weisman in his study, *The World Without Us*. That the natural response to loss may manifest in, for example, an increase in biodiversity, is an observation about human actions as much as it is the non-human response to those actions (2007, p. 5).

In books like *The Children of Men* and *The Day of the Triffids*, then, the natural world is something to be quietly resented for its ability to survive (even flourish) in a post-apocalyptic setting when humans cannot. Even the manic creation of golf courses and housing is a relatively minor ecological action, as the foreseeable absence of upkeep will quickly return the greens to woodlands. These actions, in such localised apocalypses, are relatively ineffectual, and the implicit acknowledgment of this is apparent in the sociocultural as well as the ecological responses to apocalypse.

When the apocalyptic scale is increased such that it directly and immediately impacts entire ecosystems rather than a single species, however, hu-

## Humans as Ecological Actors, continued dramatically

manity's ability to function as significant, long-term ecological actors is affected. Clasen asserts that "The most common stance towards apocalypse is ambivalence," but this is a statement predicated on the ability to work through apocalypse, and it only applies when that apocalypse is partial (2019, p. 73). The return to the land, eschewing technology to live a more pastoral life, for instance, assumes that such a life (however idealised) can still be managed. Yet as the scale of apocalypse increases, ecosystems become increasingly vulnerable, and the effects of human actions on those ecosystems become more apparent... and ever more indifferent.

When the literary apocalypse is severe enough, humanity's ability to take significant ecological action is further reduced, as is the case in post-apocalyptic environments where the ecological destruction is so devastating, so all-encompassing, that human survivors can neither mitigate that destruction nor really make it any worse. A post-apocalyptic narrative of this type is depicted in Cormac McCarthy's novel *The Road*. Here, a small number of humans survive as predators—at least in the short term. With lack of clean air and sunlight destroying the terrestrial ecosystem, however, plant and animal life is minimal; the human survivors have largely resorted to eating one another. This is a fairly closed system, however. Although children are still being born, albeit at very low rates, and often simply to be eaten—with characters observing "a charred human infant headless and gutted and blackening on the spit"—unless new ecological resources are created or discovered, the human population will soon die out (McCarthy, 2007, p. 212). Starvation amongst the few survivors is already common as the supply of canned goods continues to dwindle with little hope of producing more.

Altered climate, and the continual presence of ash from a fiery holocaust, results in a "cauterized terrain" where everything has burned, making breathing difficult (McCarthy, 2007, p. 13). The man and the boy of *The Road* must wear cotton masks over their faces in an attempt to filter out the worst of the ash.

This is clearly an ineffective measure, however, as the man is plagued by lung problems, continually coughing up blood: "In the night he woke in the cold dark coughing and he coughed till his chest was raw" (McCarthy, 2007, p. 186). This condition eventually kills him, giving readers the impression that breathing troubles are likely to be widespread amongst the remaining population. Ironic in light of our current moment, wearing masks is certainly a universal practice in this world, and indicates humanity's long-term inability to survive the harsh environment. There is nothing "ambivalent" about this apocalypse. It is the destruction of nearly all plant and animal life, and it is unmitigated horror.

Although interaction with the remaining ecology is constant, with the man and the boy walking along a road headed south to escape the northern winters, they cannot really be said to be ecological actors, and neither can their compatriots. With small exceptions, such as the discovery and consumption—and potential total destruction—of the only observed surviving morel mushrooms, and the optimistic preservation of packets of flower seeds, the direction and scale of ecological interaction is almost entirely one-way. The burned environment materially affects the few survivors, destroying their lungs and depriving them of resources, but there is very little that those survivors have done or can do to make any further material impact on that environment. The apocalypse has been so total that their capacity to further influence ecology is minimal.

When the destruction is not total, or only near-total, the human capacity for ecological action may be restored, as illustrated in Robert C. O'Brien's young adult novel, *Z for Zachariah*. Here, apocalypse has made the Earth a poisoned wasteland, too radioactive for organisms to survive. But in a distant valley, one isolated by a quirk of microclimate—"the valley had its own weather [...] A meteorological enclave"—a teenage girl is able to survive (O'Brien, 2007, p. 56). And she is not the only one to do so—there are also cows, chickens, and a dog. Fish still survive in an un-

## Humans as Ecological Actors, continued

contaminated spring. There are birds and apple trees and she is able to live comfortably on her family's small holding.

While Ann's life is constrained by the limits of the valley—she literally cannot leave it without assuring her death—her life within it is not horribly marked by apocalypse. She has enough to eat, a safe house, and supplies to make her life easier. There is no electricity, and she feels the lack of books keenly, but her standard of living, while lowered, is not significantly so. Her experience of ecological apocalypse is significantly more observational than it is experiential: "I have climbed the hills on all sides of this valley, and at the top I have climbed a tree. When I look beyond, I see that all the trees are dead, and there is never a sign of anything moving. I don't go out there" (O'Brien, 2007, p. 9). She can observe the surrounding devastation but lacks the interactive relationship with post-apocalyptic landscapes that the man and the boy of *The Road* have, for example.

Within the valley, however, Ann is able to take her place as an ecological actor. She farms, she takes care of the animals, and she clears new ground for planting. That her ecological actions are primarily directed to maintain the stability of her environmental refugia is clear. As one person working alone, she can't maintain the same level of ecological action as the previous valley residents did together, but she works to maintain an actively ordered environment in the wake of environmental devastation.

In contrast to Ann stands John Loomis, who arrives on her farm wearing the only effective radiation suit in existence, taken from the isolated laboratory where he was working during the apocalypse. The suit's plastic material is also capable of filtering air and water, as well as protecting food from radiation. The suit offers freedom of movement in an absolute absence of ecosystem, but it is also a means of completely insulating oneself from the decimated environment. Loomis "is dressed, entirely covered, in a sort of greenish plastic-looking suit. It even covers his head, and there is a glass mask for his eyes—like the wet suits skin divers

wear in cold water, only looser and bulkier. Like skin divers, too, he has an air tank on his back" (O'Brien, 2007, pp. 18-19). The separation is so complete that the capacity for any sort of ecological action is impossible. Traveling through the radioactive wastelands, encased in his suit, he is a distanced observer in a way that Ann is not.

Loomis's active refusal to engage in his role as ecological actor in the blasted post-apocalyptic environment is a practical one, based entirely on the limits of biology. Outside of Ann's refugia, he would die without the suit. Yet this absolute isolation is more than physical. There exist a number of post-apocalyptic narratives in which the refusal to truly engage with the idea of people as part of an ecosystem turns characters into cultural observers rather than people who genuinely live in a post-apocalyptic environment.

After a global pandemic and climate change crash, the world in *Clade* by James Bradley collapses. But while the world deals with drought and crop failure in Southeast Asia, economic collapse and rioting in India, the loss of island communities due to ocean levels rising, and cities burning in China and India after the plague, the characters, living in Australia, Antarctica, and Great Britain, are deliberately removed from the materiality of these events. Post-pandemic, their countries still have trains, water, Internet, and power. The government stands unchanged. There is little fear, limited military presence and limited social breakdown, and there are no shortages or conditions for starvation. The most serious consequences of life in a post-apocalyptic world happen at a distance, and to other people. This is Ann and her little farm refugia on a larger scale, insulated from the effects of apocalypse.

Anthropogenic climate change is an excellent example of humans as ecological actors, significantly affecting the environment by their actions, and yet the consequences of these actions, when so very distanced, remove the capacity for ecological action from the very characters highlighted by the narrative. They become observers of ecosystems rather than

## Humans as Ecological Actors, continued

active participants in them. There are frequent moments when the characters could be presented as part of an ecosystem, but instead take on the role of observers: Adam in Antarctica, listening to the glaciers shattering; Tom mourning the inevitable loss of the birds; Ellie making art out of the nearly-extinct bees. And Noah, who looks away from the ecology completely, searching the universe for signs of life, denying any connection to his failing planet at all. This ability to observe at a distance, to be somehow exempt from the post-apocalyptic ecosystem, is a genteel, middle-class attitude of phenomenal privilege which is never really challenged in the novel. Humans cannot be independent observers of ecology. They are, and always have been, part of it—even if their role is to change and destroy. People do not live environmental bubbles, distinct from the interconnected systems around them. Though it is certainly possible to observe an ecosystem from within that ecosystem—scientists do it all of the time!—the impact of human presence is ongoing and bidirectional. Humans affect ecosystems, but they are also affected by them, and a post-apocalyptic narrative that ignores this fundamental interconnection risks presenting an unconvincing argument.

Denying or underplaying humanity's role as ecological actors is an implicit disinclination to action. If humans are incapable of significantly affecting the environment, if they are incapable of being significantly affected by it in turn, then they become passive bystanders both to ecosystem and to apocalypse, as they are in *The Road*. Increasing emphasis on independent observation and increasing distance from meaningful engagement with the environment subsequently *decreases* incentive for action. Conversely, in narratives where the characters are fully aware of their roles as ecological actors in post-apocalyptic landscapes, that awareness and understanding encourages deliberate environmental action. The belief that humans can both be significantly affected by their ecosystem *and* significantly affect that ecosystem in turn invests actions with meaning and motivation rather than futility and ecological isolation. Most

interesting in Bradley's portrayal of the apocalypse is that the characters' attitudes toward the ecology remain the same. The impending apocalypse doesn't make them alter their consumption of resources, or prompt them to reduce their waste, or even encourage them to look deeper into the ecology as a means for future survival. At no point is their culture or interaction with the natural world questioned, other than to note the impact that humans make upon it.

This is not an isolated example. In all of the texts examined, only a small number showed the apocalypse changing the way that characters acted, or their attitude about human-ecological interaction. The concept of a resilient socio-ecological system is rarely considered in post-apocalyptic texts. The struggle is a physical one—human versus environment—not a cooperative one.

Consider the presentation of humans as ecological actors in John Wyndham's novel, *The Chrysalids*. Here, ecological interaction with the environment is a religious duty. In the wake of nuclear war, genetic mutation has significantly increased and, in the small rural communities that make up the illustrated society, marks divine displeasure. These ongoing mutations are thus perceived not as a result of exposure to radiation, but rather as a continuation of punishment and a measure of atonement both. This spiritual chastening process began with the nuclear war itself, which has been socially and religiously re-interpreted as Tribulation, a divine response to the disobedience of humanity.

The remaining population is exhorted to "WATCH THOU FOR THE MUTANT!" (Wyndham, 2001, p. 18). It is the duty of every individual to monitor plants and animals for deviations from an established norm. These deviations are destroyed, and their remains burned so that they are unable to reproduce, thus halting the transmission of the genetic mutation through the population. This same eugenics-based approach is also observed in James's *The Children of Men*. The infertility that dooms the human race is constantly monitored, with monthly gynecological

## Humans as Ecological Actors, continued

checks for women thought to be of childbearing age. Exempt from these checks are those women who are considered to have mental or physical abnormalities. As Weiss points out, however, the pregnancy at the centre of the novel belongs to a woman who has a congenital malformation of her left hand, and “the new human species will evolve from what the [governing] regime has hitherto considered genetically impure material” (2018, p. 157). The desire to control reproductive access and characteristics, and to introduce the spectre of eugenics into both human and nonhuman breeding, is an element of control that can frequently undermine long-term population health in favour of ordered, short-term benefits. Darcy notes, specifically, that “the question of fertility and reproduction ... [is] bound up in a dormant political power that is simply waiting for an opportunity to exert its control” both over scientific institutions and the population in general (2013, p. 94). This control over reproduction, then, is such that it repositions the human body as a biological—and ecological—resource. Humans, already existing as part of an ecology, can therefore also be seen as subjects within that ecology, able to be manipulated just as other elements of the ecosystem are manipulated.

The ecological results of such thinking are illustrated in *The Chrysalids*, where mutants are sterilised and, if human, exiled, to ensure the removal of their deviation from the gene pool. It is notable that this society has no understanding of the science behind these mutations or the benefits of selective breeding; they are potentially harming that society in the long term by reducing genetic diversity and making themselves vulnerable to disease or sudden environmental changes. With this constant monitoring of biology, mutations are slowly phased out of the local ecology over a period of years.

Ours was no longer a frontier region. Hard work and sacrifice had produced a stability of stock and crops which could be envied even by some communities to the east of us. You could now go some thirty miles to the south or south-west before you came to Wild Country—that is to say parts where

the chance of breeding true was less than fifty per cent. After that, everything grew more erratic across a belt which was ten miles wide in some places and up to twenty in others, until you came to the mysterious Fringes where nothing was dependable, and where, to quote my father, “the Devil struts his wide estates, and the laws of God are mocked.” (Wyndham, 2001, p. 20).

Far from removing themselves from ecological responsibility, the communities of *The Chrysalids* consider themselves morally responsible for their interconnected environment—an environment which includes humans as part of the biology to be controlled. Any deviation from the norm is failure on society’s part, but that society has no objective way of determining whether a deviation has been caused by the excess radiation of Tribulation, or by another natural or normal process. Their idea of stewardship is to transform the ecology of which they are a part into what they consider the ideal, and then to freeze it there. Their understanding of human ecological agency, then, is seen solely through the twin lenses of control and license.

The characters in *The Chrysalids* act from a position of religiously derived scientific ignorance. But when the same control is apparently justified by science, the consequences for both humanity and ecology are startlingly similar. Ecological control is the primary lens in the short fiction piece, “Utere Nihil Non Extra Quiritationem Suis” (later published separately as *Everything but the Squeal*), by John Scalzi. In a world where climate change has decimated the productive capacity of the USA, ecological ideals are driven by the guilt felt for humanity’s impact on the world. New St. Louis is a city founded on the principle of zero impact: on the idea that every product or waste material should be recyclable, and that every part of an animal is usable. All of the city’s resources are focused on this goal—including its human resources. Every citizen must contribute to the city. There can be no waste in any system, including the education system. All high school graduates must take a test to determine their job suitability, which

## Humans as Ecological Actors continued

they are assigned. Personal choice does not matter. Those who refuse to take the test by the age of twenty are evicted from the city, into the un-ecologically-controlled lands outside of the walls.

This is a particularly interesting aspect of the narrative, as it relies upon the idea that New St. Louis, inhabited by several million people, exists separately from the surrounding environment. For all of its emphasis on ecological responsibility and the implicit understanding that humans are significant ecological actors, the depiction of New St. Louis' relationship with the ecological other is one of extraordinary disconnection, especially in the light of studies such as that by Tüzün, which re-imagine urban ecology as "fertile sites of inter-species encounters which allow new possibilities to emerge" (2018, p. 190). The determined withdrawal from ecology, especially urban ecology, is simultaneously an attempt to exert consistent and complete control over a limited ecological space, and an acknowledgment of a complete lack of ecological control outside of that space.

This is exactly the situation in *Chrysalids*. Two narratives, written decades apart, approaching the ecology from two different directions, have come to the same end. And is one approach more or less successful than the other? Both communities are thriving in their own ways from the point of view of the human actors. And both communities interact with the ecology in the same way—control within a designated area, fear of the world outside of the control zone, and expulsion for those who do not belong. Are these the only roles that humans can play: the victor or the victim?

There is a third role in many of these post-apocalyptic works, that of the scavenger. Represented by the inhabitants of the Fringes in *The Chrysalids*, this role takes from the community without any attempt at management or reciprocity. McCarthy's characters in *The Road* are the same, taking from the environment and each other without regard for any long-term, sustainable relationship. Immediate survival and fear have overridden any possibility of a more calculated and long-term relationship.

From one perspective, this could be driven by the characters' vulnerability to the ecology. But in *Lotus Blue* by Cat Sparks, we see an example of a deliberate withdrawal from any action on, or relationship with, ecology, similar to the withdrawal of the citizens of New St. Louis. But where the characters of New St. Louis are self-reliant, the fortress dwellers in *Lotus Blue* are not—they have no way to support themselves within the city and no way to repair the failing technology on which they depend. They trade with the people outside of their walls and are entirely dependent on them as a third-party interaction with nature. But theirs is a parasitic lifestyle; their deliberate withdrawal from the shattered ecology outside is an interaction that, like McCarthy's characters, can only end in extinction.

These fortress dwellers exist in direct contrast to the free people outside of the fortresses. At the mercy of the ravaged land, water shortages, and the advancing desert, they lack the technology to control the ecology and struggle to exist in the environment that they inhabit. Much like the characters in John Christopher's *The Death of Grass*, for example, they band together for survival, but in a much less aggressive way. They do not murder for dwindling resources, but instead work together to improve the survival chances of all, though in a less rigid manner than *The Chrysalids*.

These stories by Wyndham, Scalzi, and Sparks exhibit three different mindsets: one aims to extend control over the ecosystem, gradually rehabilitating marginal environments to improve their suitability for human survival, while another aims to strictly limit that ecosystem, projecting control over a rigidly defined geographical area. The third tries to use another rigidly defined area as a place to avoid the idea of ecological action as much as possible. And yet, in these very different communities, the effects on the human population are the same. In the first two examples especially, those who conform to the values of the community stay within the desired ecosystem of that community. Deviation results in eviction from the desired ecosystem. This ensures

## Humans as Ecological Actors, continued

the survival of both ecosystem and community. And in both *The Chrysalids* and “Utere Nihil Non Extra Quiritationem Suis,” humans in the world outside of controlled ecosystems and communities struggle to meet basic needs because they lack sufficient capacity as ecological actors. Perhaps this is because they lack the skills needed to adapt the environment to their own needs, or perhaps the environment is so degraded that no short- or medium-term ecological action will make it significantly more habitable. In *The Chrysalids*, residents of the Fringes have to survive by raiding, for instance, as the lands they inhabit are too radioactive to support either hunting or subsistence farming.

From an ecological point of view, there is a clear tension between the exertion of control and the difficulty of maintaining a closed system. Clearly not all controlled ecosystems will be closed, but the strain of existence in a post-apocalyptic landscape often increases the perceived need for ecological refugia such as New St. Louis. The tighter that control, however, the more isolated a specific ecosystem is from the outside environment... and the less likely that specific ecosystem is to prove resilient and long-lasting.

Molly Gloss explores this tension particularly well in her novel *The Dazzle of Day*. Here, a community of Quakers leaves Earth in an attempt to colonise a distant planet. *The Dazzle of Day* is less apocalyptic in its beginning than pre-apocalypse, but the migration essentially takes place to avoid the apocalyptic environment that the Quakers can see coming. In the opening chapter, Dolores admits, “I had become afraid I would live long enough to see the end of the world” (Gloss, 1997, p. 13). War and environmental devastation are making the community’s existing North American settlement increasingly untenable. “*What happens, happens*, people frequently say, meaning not only murder and rape on the roads but death by plague or by cancer, which seem in these days to be distilled from the very air and water” (Gloss, 1997, p. 12). *Dazzle* gives introductory accounts of satellite refugia, havens of constructed

ecology in orbit, but because an orbiting station is fundamentally a closed system—deliberately so, as the wealthy clamour to remove themselves from the Earth’s failing biosphere—these ecologies lack resilience and ultimately fail.

With the first of these toroids it was something like that, the one named *Crommelin*, built for the rich man Jon Crommelin, a scrupulously beautiful, flauntingly private refuge put to circling the earth just above this poisoned sky, every grain of earth disinfected, every person and object sterilized, unpleasant insects and reptiles shut out. In a year, less than a year, there was a collapse of the organic life, and the dead construct was abandoned.

(Gloss, 1997, pp. 9-10)

The need to control all aspects of ecology certainly makes Jon Crommelin an ecological actor able to create his own closed and perfect environment, but his actions are ultimately and spectacularly unsuccessful. Increased control coupled with inadequate ecological knowledge increases the vulnerability of ecosystems. The Quakers realise this, and their colony ship, the *Dusty Miller*, contains an enormous—and enormously complex—range of species and ecosystems that must be constantly maintained in order to remain viable. Even then, humans must take on different ecological roles when the unexpected happens: “When the cats had taken a plague and died, people had found they must act as keystone predators of some species, and this killing was part of Ridaro’s work” (Gloss, 1997, p. 114).

The *Dusty Miller* is able to survive several generations of space travel because the humans inhabiting its closed system never, not even for a second, forget their roles as ecological actors. Should they forget, the contained environment would fail, and survival for every organism on board would be jeopardised. In this way, the colony ship is something of a metaphoric mirror for the people left behind on the spaceship that is Earth. Forgetting their role as ecological actors, they continue to exploit and degrade, continually lowering the carrying capacity of the planet until, we can surmise, it finally becomes uninhabitable.

## Humans as Ecological Actors, continued

The message is clear: only those who are continually conscious of their roles as ecological actors are capable of sustained and resilient community-building. The ecological actors in *The Chrysalids*, by contrast, are equally as continually conscious, but through their destruction of viable mutations, are actually increasing long term ecosystem vulnerability by decreasing genetic diversity. Both communities are engaged (or will be engaged) in what is essentially terraforming. Whether on a devastated Earth or on a distant planet, their desire to shape their environment is the result of a shared communal ideology. As Pak states, in their study on terraforming in speculative fiction, “The fundamental question asked is how we want to live, and it emerges from the concern over whether we can continue living in ways that threaten the integrity of our environments” (2016, p. 17).

Both the Quakers from *The Dazzle of Day* and the community of *The Chrysalids* are cohesive social communities, guided by religious fundamentalisms that embrace and reject diversity, respectively. Community is a powerful survival tactic in the face of ecological instability, and not all post-apocalyptic narratives rely on communities as a survival method. The main characters of *The Road*, as previously mentioned, are determined in their avoidance and distrust of outsiders, and they are not the only ones. Christopher’s *The Death of Grass* was written during the rising eco-consciousness of the 1950s—the same era that resulted in *The Silent Spring* (published in 1962) and the subsequent rise of the anti-pesticide movement. Christopher imagines the destruction of every staple grain for human existence within a matter of years, and their absence causes massive famine and conflict. Post-apocalyptic narratives tend to prioritise the human experience, viewing other species through a utilitarian lens, and the novel “depicts appeals to protect the environment as predicated upon the notion that plant life is a resource subordinate to and serving human civilization, rather than as a life form worth preserving for itself” (Matthews, 2016, p. 123). This is something also noted by Vičaka in their comments on *The Road*: the novel “offer[s] a promise

of redemption when humans realise that nature has to be saved to prevent extinction on a global scale” (Vičaka, 2015, p. 77). There is something intensely self-serving about such a redemption. Although Vičaka talks about a “global scale” in comparison to Matthews, who refers to the argument for “serving human civilization,” there is no doubt that human survival is the centre of both justifications. While this prioritisation is understandable, it tends to limit potential ecological actions by human protagonists to those that will directly benefit either themselves or their immediate communities. With rare exceptions—such as in Gloss’s *The Dazzle of Day*—recognition of inherent value in nonhuman life is lacking. This determined self-interest is often reflected in social organisation, which mirrors the exploitative environmental systems highlighted by apocalypse.

For example, the larger communities of city, town, and even village promptly disintegrate after the ecological collapse in *The Death of Grass*, and communities revert to the fundamental unit: the family. Almost immediately, the effects of this disintegration are seen in the loss of compassion, empathy, and charity for anyone outside of the family group. For instance, when John Custance, shepherding his own family to an isolated farm belonging to his brother, is faced with another family on the road, and a more vulnerable one—including children and an elderly grandparent—he denies all responsibility for them in a refusal of community values that would have been unthinkable in the pre-apocalyptic environment.

If some pre-apocalyptic actions, previously distasteful or even taboo, become acceptable after apocalypse, there are other social systems that do not change. Previously existing prejudices, and system-wide inequalities, can become further entrenched within marginal environments. An unstable world with increasingly limited resources can in some cases, encourage the continuous isolation of out-groups, in much the same way as the Norms of *The Chrysalids* maintain their society by exiling those with congenital birth defects and other mutations. *The Dazzle of Day*, with its Quaker-derived emphasis

## Humans as Ecological Actors, continued

on diversity, bucks the trend. The question of whether the disabled are eligible for interstellar migration is quickly decided, in favour of inclusion. Such emphasis on choosing diversity and inclusion as a community survival trait can also be observed in Octavia Butler's *Parable of the Sower*. Faced with a choice of who to aid on the road, Lauren's decisions are driven not by any perceived strength or skill in a person, but simply by whether they are receptive to her kindness and her ideals. She offers advice and assistance to those who need it, and some choose to join her. Her choices are cosmopolitan—an older man, a father and daughter, two ex-prostitutes, an escaped slave and her son. By including people who might be perceived as a burden, such as young children, Lauren argues that anyone is capable of becoming an actor for change.

Narratives such as *Pacifica*, by Kristine Simmons, on the other hand, are inspired by historical exclusions. Simmons' Japanese grandmother was arrested in Hawaii during World War II and sent to an internment camp, and in her introductory author's note, Simmons comments that "The setting of this story—a world post-polar ice cap melt—is also meant to represent the world [her grandmother] faced" (Simmons, 2018, p. 11). The severance of society into hostile and competing parts mimics the exploitative practices that caused ecological collapse in the first place. Ecological actors, then, are social actors as well, and the social ecosystem—with its advantages and disadvantages—often derives directly from the relationship that humans have with ecology. If that relationship chooses to prioritise conflict, exploitation, and greed over the health of the system as a whole, then there is often little incentive for humans to behave differently in relationships within their own species. This tendency is frequently underlined, or even excused, within the narrative by the belief that survival in a devastated ecology hinges on being part of a small and isolated population. If ecological apocalypse devastates ecology to the extent that larger communities become non-viable, then the only communities that survive that altered ecology will be small ones; and the smaller the community,

the less likely they are, in aggregate, to be effective ecological actors. This effectiveness may be either positive or negative, with ecological actors able to further damage ecology by their actions or to contribute to a restoration of that ecology.

This perception of other ecosystem members—and other human beings are also members of that ecosystem—as hostile actors is an attitude that can often be extended to the ecosystem itself. When the natural world is perceived as a hostile place, the role of the ecological *activist* (as opposed to ecosystem *actor*) is changed. Where once, an individual might have attracted generalised sympathy for their efforts to save the natural world they may, in a post-apocalyptic environment, be increasingly at odds with government and corporate powers, or even the ordinary people around them who are more focused on personal rather than ecological survival. There is, of course, some overlap between the two, but an emphasis on the former rather than the latter can tend to prioritise short term, ecologically destabilising behaviour.

This position is illustrated in *The Windup Girl* by Paolo Bacigalupi. Here, Kanya joins the White Shirts, the enforcement arm of the Environmental Ministry, for the express purpose of betraying them after they destroy her village when its fields become infected. But she can't be a part of this protective force without being changed by it and, when it appears that the Seed Bank that is the lifeblood and heritage of her people is going to be plundered, she rises up against the foreigners it has been promised to, destroying them, the city, and the revolutionary government, and becoming, in the process, the leader of the Environmental Ministry and a power for ecological protection herself. In effect, she becomes what she once hated, someone who will countenance violence and destruction in service of a great goal. She has learned that what she values most are her countrymen, and to protect them, she must protect the ecology first, no matter the cost. Ecological action, then, is in *The Windup Girl*, political action. The two cannot be separated. For many activists, fight-

## Humans as Ecological Actors, continued

ing for the natural world is on some level fighting for humanity; fighting to create or save a world where humans—all humans, as Butler and Gloss would argue—can survive. What, then, of the ecological activist who considers humanity a plague to be exterminated?

In *Oryx and Crake* by Margaret Atwood, the character of Oryx sees the fate of ecological activists in the death of his father and his friend Jimmy's mother, both killed for their struggle to reduce the impact of greedy corporations on the already failing ecosystem. Oryx, obsessed with the huge number of extinct species and trained by the very corporations he hates, takes the question of humanity's impact and chooses a different solution—humanity must become extinct. In their place, he creates a new breed of humans, genetically engineered to fit seamlessly into their environment and all of them lacking the features that he believes led to humanity's downfall: greed, pride, sexual competition, and overconsumption. Compare this to Gibbons in *The Windup Girl*, the AgriGen defector who, escaping to Thailand, sells his skills to the Thai government for protection and treatment for his genetic disease. He is a Generipper, "Reengineering long-extinct DNA [...] to survive despite the assaults of blister rust, Nippon genehack weevil and cibiscosis" (Bacigalupi, 2012, p. 64). When Kanya confronts him, he is dismissive of her efforts to defeat plagues and diseases, claiming that it is "easier to build a person impervious to blister rust than to protect an earlier version of the human creature" (Bacigalupi, 2012, p. 243). Gibbons does not see himself as an activist; indeed, he is egotistical and competitive, more concerned with defeating another scientist than with any philanthropic motivations. But Gibbons does not share the common opinion that gene-ripped animals have no souls, and no value. To him, the Cheshires, the New People, are the future of the world. "Evolve or die," he tells Kanya (Bacigalupi, 2012, p. 243).

In all of these narratives, the conflict is clear—humans must be the victors, or the victims. Control

equates to survival. Lack of control means the end of humanity, either by extinction or deliberate removal to make way for other species more in tune with the ecology.

The late 1990s saw a change in the concept of resource management, moving away from "the historical process of converting the world's life-support systems into mere commodities, [through which] resource management science was geared for the efficient utilisation of resources as if they were limitless" (Berkes, Folke & Colding, 2001, p. 1). This concept of the socio-ecological system considers humans, the geophysical environment, and the biological environment to be linked and dependent on each other for sustainability and resilience. To move away from the concept of control (humans acting on the ecosystem) to one of cooperation (humans acting as part of the ecosystem) requires considerable social change. Such significant changes exist in narratives like *The Day of the Triffids*, *Lotus Blue*, *The Road*, and *The Chrysalids*, for instance, as polygamy, tribalism, cannibalism, and religious fundamentalism become accepted parts of various societies. And yet, in all of these examples, human attitudes toward the environment have not significantly changed. The tension between survival and management remains.

But there is another role that humans can play in the environment, one that is measured, considerate, and takes into account both the needs of humanity and the needs of the environment. Butler's *Parable of the Sower* tells the story of Lauren Olamina, a young woman in a USA characterised by ecological and economic collapse. The lucky few live in walled-off neighbourhoods, vulnerable to attack from the homeless and desperate people outside of the walls. Within, the citizens are semi-self-sufficient, growing their own food and struggling to endure until things improve.

"Things were better when I was little," Emery said. "My mother always said they would get better again. Good times would come back. She said

## Humans as Ecological Actors, continued

they always did. My father would shake his head and not say anything.” (Butler, 1993, p. 278)

The nostalgia for past contentment is a strong theme in most post-apocalyptic narratives but doesn't necessarily lead to action. It frequently leads to a curious inertia in the population; a desire to just “hang on” and hope that things will change for the better. Even when the characters are aware of the continued fall, it doesn't drive them to act. In contrast to the people around her, Lauren sees the need for change and embraces it; she builds an entire religion called Earthseed, based on the premise that God is change, and that humans have the power to embrace change and to survive. She argues that “All successful life is Adaptable, Opportunistic, Tenacious, Interconnected and Fecund. Understand this. Use it. Shape God” (Butler, 1993, p. 117).

Butler's narrative is rare in that it says that humans can live within ecology in a relationship that is not detrimental to either. Unlike the characters in the previous narratives, Lauren recognises the need to adapt and to look to the future: “Fixing the world is not what Earthseed is about. The stars, I know [...] This world would be a better place if people lived according to Earthseed” (Butler, 1993, p. 252).

Like the characters in *Dazzle of the Day*, Butler's ecologically minded characters have realised that they can't achieve what they need on Earth due to the ecological and political indifference of the general population. Unlike the characters in *The Road* and *The Death of Grass*, however, this migration is not due to the demands of immediate survival, but is instead driven by the need to abandon an old mindset in order to develop a new one.

Is this the future for humanity? Can humans co-exist with nature in a way that damages neither? Some might argue that removing humans from an ecosystem would allow that ecosystem to recover, but this is an argument at odds with nature itself, which is also subject to chaotic and unpredictable non-human destruction (for example, meteor strikes or earthquakes). If the purist ideal of the ecosystem that Oryx, for example, envisions were to exist, then there would still be mass extinctions. They would in all likelihood be substantially fewer, but, as he would argue, the history of life is also a history of extinction.

Evolution produced humanity as much as it produced any other species. Humans, with their complex brains and excessive consumption, are part of a wider ecology, and their fitness depends on their ability to adapt to a changing environment. Whether this adaptation is physical or social is almost irrelevant, but such adaptation is frequently portrayed in the speculative post-apocalyptic narrative, and it is a portrayal that, as with other environmental issues in these stories, focuses on the human survivors' ability to further impact the apocalyptic landscape. With the depiction of an environment so suddenly and significantly altered, there is a consequential change in the way that humans interact with the natural environment. This change in interaction is primarily affected by the extent and scope of the apocalypse, which influences how humans react, as communities and as individuals, to ecological change. Whether or not they retain the power to be significant ecological actors, and whether or not they acknowledge this role (along with its past consequences and its future responsibilities), humanity's ability to affect the ecology that they are part of is perhaps the most fundamental aspect influencing post-apocalyptic life.

## Humans as Ecological Actors, continued

## References

- Atwood, Margaret. (2003). *Oryx and Crake*. McClelland and Stewart.
- Bacigalupi, Paolo. (2012). *The Windup Girl*. Night Shade Books.
- Berkes, F., Folkes, C., & Colding, J. (2000). *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge University Press.
- Bradley, James. (2015). *Clade*. Penguin.
- Butler, Octavia. (1993) *Parable of the Sower*. Headline Publishing Group.
- Christopher, John. (2016). *The Death of Grass*. The SYLE Press.
- Clasen, M. (2019). Imagining the End of the World: A Biocultural Analysis of Post-Apocalyptic Fiction. In D. Vanderbeke and B. Cooke (Eds.), *Evolution and Popular Narrative* (pp. 64-82). Brill Rodopi.
- Darcy, Soo. (2013). Power, Surveillance, and Reproductive Technology in P.D. James' *The Children of Men*. In Sharon R. Wilson (Ed.), *Women's Utopian and Dystopian Fiction* (pp. 88-111). Cambridge Scholars Publishing.
- Gloss, Molly. (1997). *The Dazzle of Day*. Tor Books.
- James, P.D. (2006). *The Children of Men*. Faber and Faber.
- Matthews, Graham J. (2016). What We Think About When We Think About Triffids: The Monstrous Vegetal in Post-War British Science Fiction. In Dawn Keetley and Angela Tenga (Eds.) *Plant Horror: Approaches to the Monstrous Vegetal in Fiction and Film* (pp. 111-128). Palgrave Macmillan.
- McCarthy, Cormac. (2007). *The Road*. Picador.
- O'Brien, Robert C. (2007). *Z for Zachariah*. Simon Pulse.
- Pak, Chris. (2016). *Terraforming: Ecopolitical Transformations and Environmentalism in Science Fiction*. Liverpool University Press.
- Scalzi, John. (2009). Utere Nihil Non Extra Quiritationem Suis. In John Scalzi (Ed.), *Metatropolis* (pp. 174-230). Tor Books.
- Simmons, Kristen. (2018). *Pacifica*. Tor Teen.
- Sparks, Cat. (2017). *Lotus Blue*. Talos Press.
- Stock, Adam. (2015). The Blind Logic of Plants: Enlightenment and Evolution in John Wyndham's *The Day of the Triffids*. *Science Fiction Studies*, 42(127), 433-457.
- Tüzün, H. Ö. (2018). Welcome to the Desert of the Anthropocene: Dystopian Cityscapes in (Post) Apocalyptic Science Fiction. *American, British and Canadian Studies*, 30(1), 171-193.
- Vičaka, I. (2015). Post-Apocalypse: Culture and Nature in Gundega Repše's and Cormac McCarthy's Works. *Interlitteraria*, 20(2), 71-78.
- Weisman, Alan. (2007). *The World Without Us*. Virgin Books Ltd.
- Weiss, Rudolf. (2018). Limitations of Solidarity in P.D. James' *The Children of Men*. *Beyond Philology*, 15(3), 149-161.
- Wyndham, John. (1975). *The Day of the Triffids*. Penguin Books.
- Wyndham, John. (2001). *The Chrysalids*. Penguin Books.

## The Cost of Production: Animal Welfare and the Post-Industrial Slaughterhouse in Margaret Atwood's *Oryx and Crake*

Stephanie Lance, Ph.D., University of South Florida

**Abstract:** This article investigates recent biotechnological advances in meat production as represented in Margaret Atwood's speculative dystopian thriller, *Oryx and Crake* (2003). The novel's near-future setting captures the relentless pursuit of science and technology that overrides ethical and humanist concerns. In what follows, I explore representations of slaughter in production as Atwood takes the animals out of the slaughterhouse and into the science lab. I aim to apply a postanimal critique to examine the ways in which the novel presents new predicaments that put animal bodies at risk for further manipulation and commodification that is shrouded in the rhetoric of "environmental sustainability." I argue that this reading discovers a new kind of animal subjugation in, what I call, the post-industrial slaughterhouse. In this space, animal bodies are subjected to cruel and unusual experiments to sustain human lives. These new forms of "slaughter" present another layer of difficulty in how we perceive animals in the future of food production.

**Keywords:** Speculative Fiction; Animal Welfare; Factory Farming; Genetic Engineering; Margaret Atwood; *Oryx and Crake*

### Introduction

Today's meat industry is a technological marvel. The inside of a modern-day poultry slaughterhouse looks like a hellish version of Willy Wonka's chocolate factory.

- Christopher Leonard, "How the Meat Industry Keeps Chicken Prices High"

Canadian speculative fiction writer Margaret Atwood constructs fictive worlds and situations not so different from our own, stretching narratives to their utmost possibilities. According to Coral Ann Howells (2006), novels such as *The Handmaid's Tale* (1985) and *Oryx and Crake* (2003) are an "imaginative writer's response to contemporary situations of cultural crisis as [the novels] suppose what may happen at what Atwood has called 'definitive moments' after which things [are] never the same again" (p. 161). In other words, a turn in one direction or another can alter and produce a counter reality, which is one reason that Atwood prefers the term, "speculative" over "science" fiction. Science fiction, Atwood (2019) claims, is a "label that denotes books with things in them we can't yet do or begin to do, talking beings we never meet, and places we can't go—and speculative fiction," she

goes on to argue, "employs the means already more or less to hand, and takes place on Planet Earth" (p. 513). Furthermore, Atwood (2019) notes that "speculative fiction can bring us that other kind of news; it can speak of what is past and passing, but especially of what's to come" (p. 515). The prophetic qualities of Atwood's writing prevent it from existing as mere social commentary. Instead, her writing promotes a call to action. Atwood imagines cultural narratives that have the potential to shape the future, allowing us to think critically about the choices we make, the consequences of those choices, and the ways that exigency should motivate us towards advocacy.

In part, Atwood's oeuvre accounts for growing anxieties over existing technologies once considered unimaginable. The first book in the *Maddaddam Trilogy*, *Oryx and Crake*, "explores the consequences of new and proposed technologies...by showing them up and running" (Atwood, 2019, p. 515). Situated within the dystopian tradition, *Oryx and Crake* offers a picture of a world where unrestrained technologies contribute to the relentless subjugation and commodification of humans, animals, and the environment. Dystopian literature questions current social conditions and political systems either through a "critical examination

## The Cost of Production, continued

of utopian premises upon which those conditions and systems are based or through the imaginative extension of those conditions and systems into different contexts that more clearly reveal their flaws and contradictions” (Booker, 1994, p. 3). Thus, *Oryx and Crake* illustrates a dystopian vision of consumer capitalism run amuck, particularly in reference to the evolution of large-scale meat production (i.e. factory farms).

This article explores Margaret Atwood’s *Oryx and Crake* through a postanimal lens, a theoretical concept emerging out of Critical Animal Studies (CAS). By reading the novel in this way, I trace the evolution of animal processing in a near-future setting where animal manipulation is hidden behind supposed “sustainable” practices. The novel reveals the ethical and moral implications of exploiting animal bodies in the name of “public health.” I argue that without taking animal welfare into consideration when moving beyond the factory farm, we simply swap one brand of exploitation with another.

Revisiting speculative fiction, especially in times of crisis, serves as a platform from which we can interrogate our present environmental practices and policies. For example, U.S. senators Cory Booker and Elizabeth Warren recently unveiled a bill that would drastically reduce the impact of factory farms. First introduced in 2019, the Farm System Reform Act focuses on concentrated animal feeding operations, or CAFOs, a term that the USDA applies widely to the factory farm production model. In general, this bill would place a moratorium on the creation of any new CAFOs, phase out existing facilities by 2040, and protect farmers that work in them through various buy-out programs. Booker says, “Our food system was not broken by the pandemic and it was not broken by independent family farms. It was broken by large, multinational corporations like Tyson, Smithfield, and JBS, that because of their buying power and size, have undue influence over the marketplace and over public policy” (Plant Based News, 2020). The bill is attracting attention now that COVID-19, the disease caused by novel coronavirus, is spreading

rapidly among meatpacking workers in U.S. production facilities (“CDC.gov,” 2020).

The negative impacts of factory farming, however, existed long before COVID-19 materialized; the pandemic has merely exposed the gross negligence and violence already festering behind factory doors. CAFOs are detrimental to the health and safety of workers, animals, the general public, and the environment. As opportunities arise to effect positive change post-COVID-19, unsustainable food practices and policies should be widely condemned. The bill that Senators Booker and Warren put forth is a move in the right direction, however, it does not specifically address the brutal ways in which animals suffer under this production model. As new policies replace old ones, animals will still suffer needlessly. The welfare of animals—along with the goal of total animal liberation—must be considered lest we replace the factory farm model with something far more insidious and unrecognizable.

In *Oryx and Crake*, Atwood creates a space for the existence of what I term a “post-industrial slaughterhouse,” which utilizes advancements in science to redefine how animal bodies are “slaughtered,” and how the manipulation of those bodies alters how we perceive human-animal relationships. This manipulation still contributes to the overall legitimization of capitalist logic that values profit over other animals. Through the novel, I illustrate how the post-industrial slaughterhouse is still an intensely exploitative space that contributes to the further objectification of animal bodies. To show Atwood’s bleak vision of the future, I explore parallels between biotechnologies represented in *Oryx and Crake* and current real-world advancements in genetic engineering. These parallels reveal the rhetorical tactics used by biotech firms and corporate agriculture to hide the continued suffering of other animals. Technologies that manipulate animal bodies in the name of public and environmental “health” are not saving animals, but further endangering them.

The post-industrial slaughterhouse represented in

## The Cost of Production, continued

*Oryx and Crake* at once eradicates the suffering of farmed animals and at the same time, introduces new predicaments that put animal bodies at risk of further manipulation and commodification. While real-world biotechnology in agriculture is in its infancy, the field is nonetheless successfully developing alternatives to large-scale farming. It is largely unknown, however, how animals will be treated under these new, and highly technologically advanced models put forth by biotech firms around the world. *Oryx and Crake* predicts a morbid outcome if these technologies are not regulated. In the novel, animal bodies are manipulated beyond comprehension, forcing us to contemplate and re-conceptualize current understandings of essential animal qualities in an effort to confront the reality of animal suffering due to underlying anthropocentric ideologies fueled by capitalist value systems.

Reading the novel through the concept of the post-animal provides an avenue for re-negotiating the value of technology and its power over animal life in three ways: first, through the ways that current technologies support hierarchies that legitimize animal abuse; second, through the negative impact of current bioengineering practices performed on animal bodies; and third—and most importantly—that post-animal theory provides a framework for unpacking animal abuse in an advanced technological age of late-stage capitalist production. By unveiling the ideological basis for animal exploitation under capitalism, we begin to understand how these technologies continue to violate animal bodies for profit.

Postanimality does not mean looking beyond the animal in a way that further hides their suffering, but instead, functions as a way to produce meaningful dialogue meant to help us imagine a world that moves beyond the terms “animal” and “human” to uncover the ways that animals still suffer under new forms of “slaughter.” When Vasile Stanescu and Richard Twine (2012) developed the theory of postanimality, they did so to expose anthropocentric values that continue to justify the use and abuse of other animals in various contexts. These values inform

government policies that keep capitalist economic principles in place, continuing to give corporations free rein to mass produce meat at the expense of humans, nonhumans, and the environment. The basic task of postanimalism is to expose these underlying assumptions that continue to promote contentious relationships between humans and other animals. Stanescu and Twine (2012) argue that only by transcending this dichotomy, can we begin to see beyond human-animal distinctions to promote a fair, ethical, and safe path forward for all species.

*Oryx and Crake* multiplies the extent to which humans exploit other animals in a near future dominated by scientific advancements that resemble the current technologies driving the agriculture industry. Atwood imagines a plausible outcome for our world by illustrating the progression of unrestrained technologies and the ways that they contribute to the earth’s apocalyptic future. In the novel, biotech companies reinforce the subjugation of animal bodies through extreme genetic modification. The entire life cycle of an animal occurs inside of scientific labs, which have come to replace traditional mechanized slaughter facilities. Instead of butchering animal bodies along large-scale, electric assembly lines, scientists confine animals to labs that prolong their lives in order to manufacture a variety of products that benefit humans alone.

Representations of post-industrial slaughterhouses in the novel are, without a doubt, still very factory-like. In labs, for example, animals are developed in petri dishes, penned in “special buildings,” and “heavily secured” (Atwood, 2003, pp. 26, 202). The labs are housed in compounds, large enclosed communities, where company employees and their families enjoy clean working facilities and protected living conditions. The protagonist, Jimmy, lives with his parents in the OrganInc compound where his father is employed as a genetic engineer and his mother, a microbiologist. Jimmy’s father likens compounds to fairy tale castles. He tells Jimmy: “castles were for keeping you and your buddies nice and safe inside, and for keeping everybody else outside” (Atwood,

## The Cost of Production, continued

2003, p. 28). Atwood creates a world that is deteriorating from environmental degradation, corporate greed, and rampant biotechnologies. In order to protect the privileged few, compound families are separated from the outside world and monitored by the CorpSeCorp, the corporations' security enforcement agencies. In contrast, the pleeblands are cities that dwell on the outskirts of compounds, filled with "the addicts, the muggers, the paupers, [and] the crazies" (Atwood, 2003, p. 27). These labels divide individuals into two classes: scientists with their families, and everyone else. Scientists, part of the elite class, control nature, while the marginalized classes are lab rats in the world's grandest science experiment.

Compound science labs specialize in an assortment of innovative technologies that are developed for mass consumption. Some engineer animals for food to sustain a growing population and others manipulate animals to manufacture desirable commodities that extend human life. In typical Atwood fashion, even compound names are tongue-in-cheek reflections of the ways that words can be manipulated to represent something new, just like the animals who reside in those facilities. For example, OrganInc Farms is a bioengineering facility where scientists create new species of animals and manipulate existing species. Part of this space is dedicated to a team of scientists who genetically modify pigs "to grow an assortment of foolproof human-tissue organs" (Atwood, 2003, p. 23). Similarly, NooSkins, a subsidiary of HelthWyzer Inc., is another type of facility that uses animals to develop skin-related biotechnologies.

In this world, genetic engineering encroaches upon all forms of life, provoking those in power to exercise absolute control over nature to sustain life and promote public "health." The children of families who live within the compound are trained at special institutions that groom the next generation of scientists for this purpose. For instance, the Watson-Crick institute, a place for especially bright young scientists, experiments on a variety of flora and fauna. The institute includes divisions such as

Botanical Transgenics, NeoGeologicals, BioDefences, and NeoAgriculturals or "AgriCouture" as nicknamed by the students. In NeoAgri, scientists create and breed animal-like creatures for food. Ironically, inside these highly surveilled and regulated compounds, scientists indulge in experiments that are constrained by nothing but the profit margin. In *Oryx and Crake*, science has the capacity to engineer an animal host that can generate and regenerate body parts in order to improve human life, lessening the animal's intrinsic value and extending their suffering. Atwood stretches agriculture industry operations to their grossest manifestation by portraying a world in which the animal body itself is a factory. In "Dis/Integrating Animals" (2006), Traci Warkentin suggests that this "treatment of animal bodies as biofactories is a clear expression of the strong reductionist trend in Western sciences in general, and biotechnologies in particular, which has resulted in a predominant view of organisms as machines" (p. 84). Much like the novel, modern factory farms in American society increase violence against animals in monstrous ways, changing the light in which animals are perceived. The confinement of large sociable animals like cows, sheep, and pigs, to small spaces leads to a variety of problems including the spread of zoonotic diseases, unsanitary living conditions, and the manipulation of an animal's genetic makeup, forcing them to adapt to unnatural living situations. Modifying animal bodies to accommodate industrial production practices changes the way that other species are valued, a common practice performed by scientists in *Oryx and Crake*.

Atwood takes part in revealing the adverse effects of the animal industrial complex, as the speculative nature of the novel gives rise to questions concerning ongoing economic, cultural, and ethical implications of these innovations. "Improvements" made to the farming industry over the last 100 years continue to negatively impact animals, human workers, and the environment because animal welfare is not taken into consideration. Atwood taps into the growing anxieties associated with current trends in in-

## The Cost of Production, continued

dustrialized food production to bring awareness to the unethical practices of the industry; however, she does not stop there. Atwood creates an environment where food production befits the industry's move toward biotechnological practices that butcher the animal body beyond recognition.

The technological advancements that manipulate animal bodies for human use not only hide the suffering of animals, but also continue to justify capitalist narratives that perpetuate violence against animals and marginalized humans. For example, the consumer capitalist model under a scientifically advanced economic system creates food-producing technologies under the guise of environmental sustainability. In *The Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability* (2008), James Gustave Speth argues that instead of taking a direct approach to repairing or avoiding environmental damage, companies focus on rhetorical tactics that put a band-aid on an already distressed economy. Predatory corporations, like those in the novel, identify shifts in consumer spending and simply rebrand products to profit off of environmentally conscious buyers, a problem commonly referred to as "greenwashing."<sup>1</sup> Labels such as "made with organic ingredients," "cage-free," "grass fed," "humanely raised," "farm-to-table," and "synthetic hormone or antibiotic free" are misleading—a rhetorical tactic that Atwood playfully exploits through the novel's almost-recognizable compound names. "Green" products dupe consumers into believing that they are investing in companies that are improving the environment, not damaging it further.<sup>2</sup>

Representations of consumer capitalism targeting the "environmentally conscious" in *Oryx and Crake* act as an instigator contributing to the fall of modern civilization. Gerry Canavan (2012) discusses the novel's apocalyptic qualities to argue that the end of the world and the end of capitalism are one in the same. Canavan (2012) suggests that the book seeks to "open up new spaces for imagining a post-capitalist future through a satirical, science fictional staging of capitalism's final catastrophic breakdown—and the

subsequent emergence of other kinds of lives, after the end of history" (p. 139). Interlocking systems of corporate power and scientific manipulation become increasingly more transparent as the novel draws attention to the systematic basis driving the exploitation of Earth and oppression of marginalized bodies. In *Oryx and Crake*, the slaughterhouse evolves past assembly-line style butchering. Instead, the creation of animal-like bodies via advanced genetic engineering and cell manipulation conducted within science labs exposes just how far corporations will go to exploit animals for profit, ignoring the ethical implications of their actions.

### "Nature is to zoos as God is to churches": Farms of the Future

Factory farming is an archaic tradition in *Oryx and Crake*, and yet the "factory" mentality is still upheld in the science lab. An animal's worth is measured by its use-value, and genetically modified organisms yield greater profit. In the novel, genetic engineering provides a platform for humans to exercise power over animals for entertainment purposes and supposed health benefits. Scientists are given the freedom to experiment on animals as long as the end result proves lucrative. At OrganInc Farms, scientists experiment with animals as an after-hours hobby. Scientists brag about how "create-an-animal was so much fun," that "it made you feel like God" (Atwood, 2003, p. 51). They create and destroy a number of animals like the snat (combination of snake and rat) and the rakunk (part raccoon, part skunk). Rakunks are engineered without the skunk's pungent smell and minus the "crabbiness" of raccoons; they are "clean, with a nice disposition. Placid" (Atwood, 2003, p. 51). In the novel, rakunks are well-loved "pets."

OrganInc's grandest creations, the pigeons, however, are not well-loved by the compound community; they are feared and reviled, but provide humans with vital, life-saving organs. Unlike the "cute" factor that draws humans to rakunks, pigeons are dangerous hybrids spliced with human DNA for the purpose of producing human replacement organs. In the Or-

## The Cost of Production, continued

ganInc compound, the line between human and animal is blurred because of the pigeons' unmistakably sentient characteristics. Geneticists hope that "none of the defunct pigs ended up as bacon and sausages: no one would want to eat an animal whose cells might be identical with at least some of their own" (Atwood, 2003, pp. 23-4). They wonder if "pigeon pie...pigeon pancakes, pigeon popcorn" could end up on the lunch menu as a way of disposing of them (Atwood, 2003, p. 24). In the cafeteria, staff are weary of the intelligence that pigeons possess. If pigs are engineered with human DNA, eating a pigeon would be much like eating a human. Geneticists and staff acknowledge the ethical dilemma of their lunches only when faced with the possibility of eating a pigeon because they are fully aware of the genetic material from which these creatures are bred. Likewise, Jimmy "did not want to eat a pigeon, because he thought of the pigeons as creatures much like himself. Neither he nor they had a lot of say in what was going on" (Atwood, 2003, p. 24).

Jimmy's recognition of pigeons as sentient creatures is also a reminder that animals bred for food are whole, living, feeling, thinking beings before they are butchered, ground up, pre-packaged, and served up for a meal. Furthermore, pigeons are not the only species subjected to the exploitative practices of corporate dominance. Jimmy realizes that he, too, was born into a system that only values his capacity for production to benefit the corporations for which he is groomed.

The regulatory pressure to conform is not only exercised on animal bodies, but also on the scientists who work in compound labs. Vulnerable humans are subjected to captivity, surveillance, and punishment. Jimmy's mother is captured and executed for "treason," a deliberate act that justifies violence for the "greater good" of the community. Ironically, violence is justified to preserve life and Jimmy's mother, and others like her, are sacrificed in order to maintain the cycles of violence that keep compounds running efficiently.

The CorpSeCorps are put in place to protect the economic interests of corporations that run compound facilities and dispose of anyone who poses a threat to those interests, like Jimmy's mother. His mother has a psychological breakdown and "retires" from her work as a microbiologist when she recognizes that the laws of nature are being violated to meet consumer demand. She tells Jimmy's father, "you're interfering with the building blocks of life. It's immoral. It's sacrilegious" (Atwood, 2003, p. 57). Jimmy's mother eventually runs off to join the eco-religious group, the God's Gardeners, a theological community that defies compound corporate culture in favor of a harmonious relationship with the Earth. Jimmy's mother is motivated to rebel because of her insider knowledge of the industry, but this same knowledge makes her a threat to the institution from which she is running. The CorpSeCorps men flag Jimmy and his family as dissenters. The element of control that is exercised over human bodies is the same force that empowers elite groups to practice science unethically. In Atwood's world, everyone is at risk of being "slaughtered."

Since the novel's original publication over 16 years ago, there is striking similarity between Atwood's imaginative future and what is currently underway in the field of bioengineering. In an interview on *Science Friday* (2016), a weekly radio show dedicated to science and technology, Atwood discusses the novel's genetically advanced world. She reminds us that "the things in the book that people may think are very weird—and they may think that I just made them up—some of them already existed when I was writing the book" (*Science Friday*, para. 7). Atwood's fictional inventions, like the crackers, pigeons, ChickieNobs, wolvogs, and rakunks, etc., are inspired by real genetic wonders.<sup>3</sup> Atwood's far-fetched fictional world—that is not so very far-fetched anymore—reveals the extreme lengths that humans will go to commodify animal bodies. Interfering with the "building blocks of life," as Jimmy's mother calls it, is considered a necessary evil for the purpose of manufacturing cutting edge products at the expense of

## The Cost of Production, continued

animal welfare. While genetic changes may one day spare farm animals from the factory farm, these technologies legitimize new forms of “butchering.”

### “What the hell is it?”: Cultured Meat and the Morality of Meat-eating

Genetic modification is one of many developing scientific achievements explored in *Oryx and Crake*. In recent years, reports show that gene editing is also advantageous. Gene editing allows researchers to customize a living organism’s own genetic sequence for a variety of purposes. In the meat industry, editing an animal’s genetic code yields more efficient bodies befitting an industrial environment, eliminating parts of the animal that are “unnecessary.” For example, a firm out of St. Paul, Minnesota is creating a “strain of hornless Holstein cattle” (“Factory Fresh,” 2016, para. 7). According to the firm, Holsteins are popular milking cows, but horns “make them dangerous to work with, so they are normally dehorned as calves, which is messy, and painful for the animal” (“Factory Fresh,” 2016, section “Technology Can Improve...” para.4). Similarly, a company called Recombinetics manipulates genes to produce “castration-free pigs.” This species of pig is not subjected to the painful castration process because piglets “never go through puberty,” making castration unnecessary (Choi, 2018, para. 7).<sup>4</sup> Instead of addressing why these processes are necessary in the first place, the animal body is manipulated to fit the industry, an industry that does not provide adequate space or stress-free living conditions for animals.

Experiments at the cellular level (lab-grown meat or in vitro meat) are also attracting attention due to the industry’s “environmentally friendly” appeal. Bioengineering promotes an ethical alternative to factory farming, but continues to justify the desire to manipulate animal bodies to satisfy the industry and meat-eating culture. Scholars have incorporated the term postanimal to challenge the anthropocentric ideologies that lab-grown meat perpetuates. In the article, “In Vitro Meat: Power, Authenticity, and Vegetarianism,” John Miller (2012) argues that lab grown meat merely preserves a meat-eating culture, what

he calls a “carniculture.” Advancements in bioengineering render factory-farming operations unnecessary, and yet, these tech-savvy practices still contribute to the human-animal divide that devalues animal bodies.

Current anxieties over bioengineering legitimize concerns brought to light in the fictive world that Atwood creates. At the end of her essay on Atwood and environmentalism, Shannon Hengen comments that “nature—physical or human—seen as a commodity always represents betrayal in Atwood’s works, and betrayal has consequences” (84). In the novel, regardless of technology that promises “environmentally friendly” and “sustainable meat,” the industry’s questionable practices lead to a consumer culture that spirals out of control. The novel illustrates how cultured meat is used to appease industry desires through Atwood’s invention of chicken-like creatures, called ChickieNobs. These specimens are grown and genetically altered in science labs.

The ChickieNob is unlike a real chicken and among students in “NeoAgriculturals,” it is described as a “large, bulblike object that seemed to be covered with stippled whitish-yellow skin. Out of it came twenty thick fleshy tubes, and at the end of each tube another bulb was growing” (Atwood, 2003, p. 202). Crake confirms for Jimmy that these bulbs of flesh are indeed “chickens...chicken parts. Just the breasts, on this one. They’ve got ones that specialize in drumsticks, too, twelve to a growth unit” (Atwood, 2003, p. 202). Jimmy is perplexed by the absence of a head, but the scientist confirms that the head is in the middle: “There’s a mouth opening at the top, they dump the nutrients in there. No eyes or beak or anything, they don’t need those” (Atwood, 2003, p. 202). The scientist also points out that they have eliminated brain functions that had nothing to do with “digestion, assimilation, and growth,” so the “animal welfare freaks won’t be able to say a word, because the thing feels no pain” (Atwood, 2003, p. 203). Scientists’ efforts to design creatures that appease the “welfare freaks” are countered by the God’s Gardeners mere weeks after the “fall.” News

## The Cost of Production, continued

reports that captured widespread riots and raids included a video of the God's Gardeners breaking into a ChickieNob production facility to liberate ChickieNobs (Atwood, 2003, p. 340).

ChickieNobs are fascinating inventions, as they raise an important question regarding the moral and ethical treatment of animals, posing a challenge to the central philosophy posited by animal rights philosopher Peter Singer: Are pain and suffering the sole determinants of how animals are treated? In the context of the novel, this question is challenged through the illustrations of compound mentality and the counter actions of the God's Gardeners. American writer, feminist, and animal rights advocate, Carol J. Adams confirms that the "focus on suffering creates a new category, 'humane meat,'" that nullifies the problem: "they aren't suffering so it's okay to eat them" (1990, p. 14). Furthermore, ecophilosopher Russell Edwards (2015) notes that, "despite the total neutralisation of pain and suffering [in the ChickieNob], inflicting such an existence upon another living being seems worse than most horrible forms of factory farming currently practised" (para. 3). The creation of ChickieNobs calls into question capitalist value systems that uphold human exceptionalism. As Edwards (2015) reminds us, "humans are just one of many species making up the ecological community; we are not the masters of the community, or the masters of its members" (para. 10). A lack of respect for other species and the ecological community itself is the driving force behind the violent treatment of nonhuman animals. Despite the absence of eyes and a beak, the use of ChickieNobs draws a strong reaction from the God's Gardeners and even Jimmy in the moment they are revealed to him, and yet, he continues to consume the chicken product throughout the novel.

Jimmy's contradictory behavior embodies the meat-eating culture that prevails regardless of "environmentally friendly" tactics touted by production facilities in the novel. The creation of ChickieNobs not only reduces nonhuman animals to, what Warkentin (2006) describes as "biomachines," but also normal-

izes the practice. Warkentin (2006) contends that "the mechanization of nature will lead to the mechanization of ourselves, our sentiments, judgments, fear[s], and dreams" (p. 100). Reducing other species to inanimate objects will create an ethical void and diminish care for the integrity of life, which is why Stanescu and Twine (2012) propose a postanimal perspective to consider ways of exposing the "ultimate capitalization of animal bodies" (p. 6). Without recognition of the interrelated forms of species oppression, humans become desensitized, not only to the unethical treatment of other animals, but also to various forms of violence that take place outside of the science lab.

In *Oryx and Crake*, violence does not exist in a vacuum, and so the questionable ethics involved in slaughterhouse operations also run rampant throughout various entertainment mediums that glorify violence. The processes that prevent ChickieNobs from looking and acting like chickens parallel the ways in which humanity negotiates relationships with their own species. As teenagers, Crake and Jimmy enjoyed entertainment in the form of video games and reality television like *Extinctathon*, *Queek Geek Show*, and *Nitee-nite.com*. These entertainment mediums present violence in various ways. While watching executions on *Hedsoff.com*, Jimmy and Crake question the validity of the actions they are viewing:

Jimmy: "Do you think they're really being executed?" He said. "A lot of them look like simulations."

"You never know," said Crake.

"You never know what?"

"What is reality?"

(Atwood, 2003, p. 83)

Violent actions are sensationalized through mediums that show various forms of bodily mutilations on a continuous loop. Perceptions of reality are lost in the repetitive nature of actions viewed on the screen. Under such circumstances, these violent actions take on an unrealistic quality, leading to emotional

## The Cost of Production, continued

dullness. Violence against bodies is normalized in a society that performs violent actions on a regular basis, and the viewer becomes desensitized to this violence.

Queek Greek show, in particular, features a contest where humans eat live animals, and prizes of “hard-to-come-by-foods” are awarded (Atwood, 2003, p. 85). “Real” products are so rare in this world that the public resorts to unthinkably violent contests just to taste some semblance of authenticity. Jimmy watches and thinks: “it was amazing what people would do for a couple of lamb chops or a chunk of genuine brie” (Atwood, 2003, p. 85). Entranced by what he sees, Jimmy flips from the Queek Greek show to pornographic videos until the mutilations of bodies are synchronized:

The body parts moving around on screen in slow motion, an underwater ballet of flesh and blood under stress, hard and soft joining and separating, groans and screams, close-ups of clenched eyes and clenched teeth, spurts of this or that. If you switched back and forth fast, it all came to look like the same event. Sometimes they’d have both things on at once, on a different screen.

(Atwood, 2003, p. 86)

The imagery in this scene illustrates fragmentation, mutilation, and violence. Body parts, whether human or nonhuman, are indistinguishable from each other. Screams, groans, and spurts of blood signify both slaughter and sex; there is no distinction between the two acts. This imagery is also reminiscent of how slaughterhouse production is typically described: “flesh and blood under stress,” “groans and screams,” and “clenched eyes and clenched teeth.” Bodies are violated, commodified, and degraded for the sake of entertainment. The internet-based shows described above are readily available in Jimmy’s world, revealing a level of brutality that commodifies these actions under a capitalist value system for the sake of desire.

Regardless of the desensitizing capabilities that genetic engineering may provide, concern for the

existence of living beings needs to move beyond sentience to avoid the apocalyptic demise of humankind. While shrouded in “environmentally friendly” rhetoric, lab-grown meat presents a major moral crisis. If we continue to regard the environment as a commodity, we run the risk of opening ourselves up to other harmful acts, including the continuation of abuses performed on other species and humans, a narrative trajectory that Atwood fulfills in *Oryx and Crake*.

While ChickieNobs are represented as extreme examples in the novel, cellular regeneration of animal protein in labs around the world has grown exponentially in recent years. Unlike plant-based imitations, lab-grown meat “starts with an animal” (Servick, 2018, para. 2). Cultured meat was a technological concept popularized by Jason Matheny in the early 2000s, and unveiled as “slaughter-free meat” in 2013 by Mark Post, a professor from Maastricht University in the Netherlands. Post unveiled the first hamburger made from muscle cells grown in a lab. According to Post, technological improvements already underway will “increase the density of muscle cells that can be grown in a reactor, (with) hopes that Mosa Meat [Post’s company]...will have hamburger mince ready for sale...in five years’ time” (“Factory Fresh,” 2016, section “Where’s the Beef?” para. 3). The hefty price tag involved in manufacturing these products, however, has forced them to renegotiate this timeline if the company wants to distribute widely. Nonetheless, the popularity of lab-grown meat is increasing. A firm out of California, Memphis Meats, created a similar product with the first lab-grown meatball (“Factory Fresh,” 2016, section “Where’s the Beef?” para. 3). In fact, Bill Gates, and recently, the Tyson Corporation, invested in Memphis Meats in January of 2018. As foreshadowed by Atwood, technology and agriculture companies are already partnering to profit from this new industry. Bill Gates, the billionaire tech giant and Tyson, one of the largest chicken firms in the country, are buying into a new version of meat production that allegedly promises benefits for humans and the environment (Durisin, 2018).

## The Cost of Production, continued

The introduction of in vitro meat has offered a vision of a future that eliminates most animals from the meat-making process, however, the process still poses a risk to the animal population if the wellbeing of the animal is subsequently disregarded. Animal cells from the original host are extracted, so animals are required, at least for the foreseeable future, in the process of mass-producing lab-grown meat for the public at an affordable price. Mosa Meats claims that only 150 cows would be needed to “satisfy the world’s meat demand,” but admits that “this would be scaled up as the population grew” (Woollven, 2020). The initial process of cell extraction is a controversial process that involves using fetal bovine serum or FBS, which is derived from the fetuses of cows (Woollven, 2020). This process is one of many hurdles that cellular agriculture must overcome to gain consumer trust. Woollven (2020) reports that Mosa has since “moved on from its initial use of FBS and “claims to have developed a serum-free medium, which it is now optimising. However, it acknowledges that consumer reticence is still a challenge.”

While promising, lab-grown meat companies should progress with caution. Susan McHugh (2010) reminds us that information about the in vitro process is constantly changing and is not readily available, creating “profound misunderstandings not only of how people and animals [are] presently involved in these processes, but also of meat’s liminal life among human and animal bodies” (p. 187). Professor of Philosophy Ben Bramble argues that lab-grown meat presents a “serious moral problem from the fact that we will likely switch over to lab-grown meat...thanks to its benefits for human health or the environment...[but] we will do it for our own sake and not for the sake of animals” (Bramble, 2017, para. 5).

The impact of lab-grown meat may likely reflect positively on the bioengineering industry because of its innovative way of eliminating the need for slaughtering animals, an effort to end their suffering in the future. If we switch over merely for the benefit of human health as Bramble (2017) contends, however, we risk failing to take action against factory farms for

moral reasons, which “could leave us open to committing other atrocities, or harming ourselves in various ways” (para. 11).

Replicating real meat ultimately legitimizes and sustains the public’s appetite for animal protein. It does not interrogate the anthropocentric value system that empowers a meat-eating culture. Stanescu and Twine (2012) explain that “far from a critique of factory farming, anthropocentric privilege, and human chauvinism, in reality, the fabrication of in vitro meat serves merely to hide the reality of both capitalism and speciesism, promising, although never delivering, a world in which the instrumentality of nonhuman life has become rendered ‘sustainable’” (p. 6). Essentially, the cellular agriculture industry found a way to appeal to environmentally conscious buyers by rationalizing their use of animals in order to make money.

In “The Artificial Meat Factory—the science of your synthetic supper” (2019), Tom Ireland states that “just one cell could, in theory, be used to grow an infinite amount of meat. When fed a nutrient-rich serum, the cells turn into muscle cells and proliferate, doubling in number roughly every few days” (para. 9). Just as the title of his article implies, the artificial meat industry is, indeed, a factory, and must operate as such in order to produce industrial-scale products. The danger, however, lies in the power of creation for the sake of creating. Ireland notes that with, “using ‘cellular agriculture,’ there’s no reason why scientists couldn’t grow artificial meat with characteristics from a combination of animals, or enhance lab-grown meat with healthier fats, vitamins, or vaccines. We could even taste the flesh of rare animals that nobody would dream of slaughtering for food. Panda burger, anyone?” (para. 5). This statement, while tongue-in-cheek, should give us pause for two reasons: first, in order to replicate cells, real animals must be used, and second, experimentation involved in combining different animals for novelty purposes is, and should be, forbidden.

## The Cost of Production, continued

As Stanescu and Twine (2012) reiterate, anthropocentric privilege and human chauvinism are at work here if animal products are created for amusement and novelty. With knowledge of recent developments in cellular agriculture, *Oryx and Crake* exists as a prescient novel leading us towards a future Atwood rightly foreshadows.

### “Not real can tell us about real”: Manipulation of Reality and Concluding Thoughts

*Oryx and Crake* explores a society that is accustomed to consuming genetically engineered products and the potential consequences that accompany these consumption practices. Jimmy is accustomed to food like ChickieNobs, Sveltana No-Meat Cocktail Sausages, and chocolate flavored energy bars, all foods created in a lab, and foods that he resents. This resentment brings forth a nostalgia for “real” meat. Because meat-eating is deeply embedded in Western culture, technological “fixes” that involve producing fake meat in the novel are met with a longing for what is no longer easily accessible due to environmental degradation. Jimmy’s exposure to the industry’s careless manipulation of animal bodies is ironically met with a fascination with “real” meat.

In this environmentally toxic world, “real” meat is scarce and only the elite have access to it, explaining Jimmy’s fascination. In “*Oryx and Crake* and the New Nostalgia for Real Meat” (2009), Jovian Parry notes that “animal flesh is accorded a special prestige, and a special set of meanings” in the novel (p. 243). In Atwood’s near future setting, “real” meat is manufactured as a rare and privileged commodity. As an adult, Crake invites Jimmy to dinner. Jimmy marvels at what he is eating: real oysters...real Japanese beef, rare as diamonds” (Atwood, 2003, p. 289). Even Jimmy’s privileged status does not afford him the opportunity to experience the taste of “real” meat. Just as “pleebs” are geographically separated from the socially elite who live in compounds, “real” meat is served up only for the rich and powerful.

Jimmy’s insatiable appetite for meat is simultaneously met with a realization about meat-eating, be-

cause in order to eat meat, an act of violence against animals must take place. In a manifestation of his lost childhood memory, Jimmy helps readers to reconnect with meat’s original source. The novel’s “Bonfire” chapter is one of the most poignant for illustrating violence against animal bodies and the ways in which readers may experience a sense of unease at this re-connection between animal and meat. Jimmy witnesses burning piles of animals as they were intentionally infected with a virus by a genetic engineering company in order to possibly “drive up meat prices” (Parry, 2009, p. 244). Here, consumer capitalist markets benefit off of “disasters [which] can potentially be as lucrative as they can be devastating,” and so *Oryx and Crake* exposes not only the disconnect between meat and meat-eater, but also between consumer capitalism and the power that it has over the manipulation of bodies for profit, even during global health and economic crises (Parry, 2009, p. 244).

This scene re-captures the connection between live animal and meat, the essence of meat production that is deeply hidden behind the mechanized and highly scientific processes that transform animals into food. Jimmy’s experience allows us to reclaim the reality of suffering that is associated with meat-eating, however, Jimmy’s empathy is later replaced with apathy as the system erodes his ability to decipher what is real from what is fake. Jimmy remembers pigs, cows, and sheep burning in enormous piles, “flames shot up and out, yellow and white and red and orange, and a smell of charred flesh filled the air” (Atwood, 2003, p. 16). The smell reminded Jimmy of the way that his hair smelled when he burned it. Jimmy feels anxious about the animals and asks his dad if they suffered, and his dad replies: “the animals were dead. They were like steaks and sausages, only they still had their skins on” (Atwood, 2003, p. 16). Through Jimmy’s retelling of this moment, readers are made aware of the connection between suffering, sentience, and food production. As a child, Jimmy is confused by his father’s words: “steaks didn’t have heads. The heads made a

## The Cost of Production, continued

difference: he thought he could see the animals looking at him reproachfully out of their burning eyes... the lit-up, suffering animals” (Atwood, 2003, pp. 18-9). Jimmy’s experience brings about a re-awareness of where meat comes from, and the animals that suffer to provide humans with the food that they desire.

The advancements in biotechnology that infiltrate the agriculture industry in Atwood’s fictive world call attention to the realities that we face today. Continual abuse of the land, and the unabashed extraction of the Earth’s natural resources are contributing to the acceleration of climate change, the annihilation of species, pandemics, and complete environmental destruction. For the global economy to continue profiting off of the Earth’s destruction, industries must continue to mask the atrocities that humanity commits against animals by employing “greening” tactics that further the manipulation of bodies and perpetuate damaging ideologies. Warkentin (2006) argues that “if we continue along the biotechnological path without questioning its ideological basis...we gamble with becoming machines ourselves” (p. 101).

If the world’s current methods of producing, distributing, and consuming animal products are unhealthy for the Earth and its inhabitants, what comes next? Do we embrace technologies furthering the manipulation of other species in order to eliminate current farming practices that contribute to global warming at accelerated rates, or is there a better way? Animal agriculture, alone, is the second largest contributor to “human-made greenhouse gas emissions after fossil fuels and is the leading cause of deforestation, water and air pollution, and biodiversity loss” (“Climate Nexus.org,” para. 1). To protest the animal industrial complex just to replace it with something that continues to harm the lives of animals is not good enough; we must do better, especially at a moment when change is inevitable. Food production could be unrecognizable in a post-pandemic world, and an interdisciplinary approach led by animal rights scholars, students, and activists should be the driving force behind changing the ways that food is produced and

distributed to ensure the safety of humans, animals, and the environment.

### Notes

<sup>1</sup> Greenwashing is a widespread marketing tactic which “enable[s] companies to present themselves as caring environmental stewards, even as they [are] engaging in environmentally unsustainable practices” (Watson, 2016).

<sup>2</sup> While the organic food industry currently makes up almost 6% of the U.S. market, it is difficult to target exact market size because it is not always easy to identify whether an organic food product sold is actually organic (Food Industry, 2019; Gelski, 2019; USDA Agriculture Marketing Service, 2020). Likewise, when it comes to animal welfare, the organic industry lacks in transparency. Environmentally conscious buyers spend more on organic animal products with the expectation that specific rules will be enforced to ensure that animals have access to the outdoors and other animal welfare related benefits, however, this is not necessarily the case. Organic regulations involving “food” animals are vague and the USDA has lagged on providing the meaningful animal welfare regulations and enforcement that consumers expect (ASPCA, 2020).

<sup>3</sup> Alba, the glowing bunny created by Eduardo Kac (Copeland, reporting for The Washington Post). Spider goats, created by Randy Lewis, produce milk with a silk protein that can be refined and spun into a fiber. A taxidermy version of a spider goat, Freckles, is on display at the Center for PostNatural History in Pittsburgh, Pennsylvania (Rutherford reporting for The Guardian); Scientist Juan Carlos Izpisua Belmonte wants to use CRISPR gene editing to create human-animal hybrids that we can harvest for parts; (Hayasaki, reporting for Wired).

<sup>4</sup> According to reports, pig castration is necessary because once the piglet goes through puberty, the meat takes on an unpleasant order known as “boar taint,” so pigs are castrated, a procedure that is commonly performed without painkillers. Altering the ge-



**The Cost of Production, continued**

netic makeup of the pig would eliminate this act, a so-called victory for animal advocates. Reported by Candice Choi from Phys.org, a leading journal in biotechnology.

## The Cost of Production, continued

## References

- Animal Agriculture's Impact on Climate Change*. (2015). Climatesexus. <https://climatesexus.org/climate-issues/food/animal-agricultures-impact-on-climate-change/> Adams, C. J. (1990). *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory*. Continuum International Publishing Group.
- Armstrong, P. (2008). *What Animals Mean In the Fiction of Modernity*. Routledge.
- Atwood, M. (2004) *The Handmaid's Tale and Oryx and Crake*: In Context. *PMLA*, Vol. 119. (3). <https://www.jstor.org/stable/25486066>.
- Atwood, M. (2003). *Oryx and Crake*. Anchor Books.
- Bramble, B. (2017, December 14). Lab Grown Meat Could Let Humanity Ignore Serious Moral Failing. *The Conversation*, <http://theconversation.com/lab-grown-meat-could-let-humanity-ignore-a-serious-moral-failing-88909>.
- Booker, K. (1994). *Dystopian Literature: A Theory and Research Guide*. Greenwood Press.
- Canavan, G. (2012). Hope, But Not for Us: Ecological Science Fiction and the End of the World in Margaret Atwood's *Oryx and Crake* and *The Year of the Flood*. *LIT: Literature Interpretation Theory*. 23(2), 138-159. <https://doi.org/10.1080/10436928.2012.676914>.
- Copeland, L. (2000, October 23). It's Not Easy Being Green. *Washington Post*. <https://www.latimes.com/archives/la-xpm-2000-oct-23-cl-40611-story.html>.
- Durisin, M. (2018, January 29). Tyson Joins Bill Gates, Cargill to Invest in Lab-Meat Producer. *Bloomberg Business*. <https://www.bloomberg.com/news/articles/2018-01-29/tyson-joins-bill-gates-cargill-to-invest-in-lab-meat-producer>
- Edwards, R. (2015, September 29). ChickieNobs and Ecological Dignity. *Culture Dysphoria*. 2015, <https://medium.com/culture-dysphoria/chickienobs-and-ecological-dignity-cdfcfec4d5eb>.
- Factory Fresh: Technology Quarterly/The Future of Agriculture. (2016). *The Economist*. <https://www.economist.com/technology-quarterly/2016-06-09/factory-fresh>.
- Gelski, J. (2019). U.S. Annual Organic Food Sales Near \$48 Billion. *Food Business News*. <https://www.foodbusinessnews.net/articles/13805-us-organic-food-sales-near-48-billion>
- Gustave Speth, J. (2008). *The Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability*. Yale University Press.
- Hayasaki, E. (2019, March 19). Better Living Through Crispr: Growing Human Organs in Pigs. *Wired*. <https://www.wired.com/story/belmonte-crispr-human-animal-hybrid-organs/>.
- Hengen, S. (2006). *Margaret Atwood and Environmentalism. The Cambridge Companion to Margaret Atwood*, edited by Coral Ann Howells, Cambridge University Press, 72-85.
- How Big is the Organic Food Industry in the United States? (2019). *Food Industry.Com*. <https://www.foodindustry.com/articles/how-big-is-the-organic-food-market-in-the-us/>
- Howells, C. A. (2006). Margaret Atwood's Dystopian Visions: *The Handmaid's Tale* and *Oryx and Crake*. *The Cambridge Companion to Margaret Atwood*, edited by Coral Ann Howells, Cambridge University Press, 161-175.
- Ireland, T. (2019, May 23). The artificial meat factory-the science of your synthetic supper. *Science Focus Magazine*. <https://www.sciencefocus.com/future-technology/the-artificial-meat-factory-the-science-of-your-synthetic-supper/>.
- Leonard, C. (2014, March 3). How the Meat Industry Keeps Chicken Prices High. *Slate*. <https://slate.com/human-interest/2014/03/meat-racket-excerpt-how-tyson-keeps-chicken-prices-high.html>.

## The Cost of Production, continued

## References (cont...)

- Margaret Atwood on the Science Behind *Oryx and Crake*. (2015). *Science Friday*. <https://www.sciencefriday.com/segments/margaret-atwood-on-the-science-behind-oryx-and-crake/>
- McHugh, S. (2010). Real Artificial: Tissue-cultured Meat, Genetically Modified Farm Animals, and Fictions. *Configurations*, 18(1), 181-197. doi: 10.1353/con.2010.0006
- Miller, J. (2012). In Vitro Meat: Power, Authenticity, and Vegetarianism. *Journal for Critical Animal Studies*. 10(4), 41-63.
- Parry, J. (2009). *Oryx and Crake* and the New Nostalgia for Real Meat. *Society and Animals*, 17(3), 241-256. doi: 10.1163/156853009X445406
- Elizabeth Warren and Cory Booker Co-Sponsor Bill To Ban Factory Farming. (2020, May 12). *Plant Based News*. <https://www.plantbasednews.org/culture/-elizabeth-warren-cory-booker-ban-factory-farming>
- Porcine Reproductive and Respiratory Syndrome (PRRS) (2019). Iowa State University College of Veterinary Medicine: *Veterinary Diagnostic and Production Animal Medicine*. <https://vetmed.iastate.edu/vdpam/FSVD/swine/index-diseases/porcine-reproductive>.
- Rutherford, A. (2012, January 14). Synthetic Biology and the Rise of the Spider Goats. *The Guardian*. <https://www.theguardian.com/science/2012/jan/14/synthetic-biology-spider-goat-genetics>
- Servick, K. (2018, May). As Lab-Grown Meat Advances, U.S. Lawmakers Call for Regulation. *Science*. <https://www.sciencemag.org/news/2018/05/lab-grown-meat-advances-us-lawmakers-call-regulation>.
- Stanescu, V. & Twine, R. (2012). Post-Animal Studies: The Future(s) of Critical Animal Studies. *Journal for Critical Animal Studies*. 10(4), 4-19.
- The Battle to Ensure Protections for USDA Organic Animals. (2020, June 4). *ASPCA*. <https://www.aspca.org/news/battle-ensure-protections-usda-organic-animals>
- USDA Agriculture Marketing Service. (2020). *U.S. Department of Agriculture*. <https://www.ams.usda.gov/grades-standards/organic-standards>
- Warkentin, T. (2006). Dis/Integrating Animals: Ethical Dimensions of the Genetic Engineering of Animals for Human Consumption. *AI and Society*, 20, 82-102. <https://doi.org/10.1007/s00146-005-0009-2>
- Watson, B. (2016, August 20). The Troubling Evolution of Corporate Greenwashing. *The Guardian*. <https://www.theguardian.com/sustainable-business/2016/aug/20/greenwashing-environmentalism-lies-companies>
- What Will 10B People Eat? (2018, October 21). *Tampa Bay Times*, p. 4A.
- Woollven, E. (2020, April 21). Culture club: cell-based meat back in the spotlight. *Food Manufacture*. <https://www.foodmanufacture.co.uk/Article/2020/04/21/Culture-club-cell-based-meat-back-in-the-spotlight>.

## The Mutant Land:

### How the Island Krakoa Dictates the Mutant Society in *House of X*

Brett Butler, Ph.D. Loyola University Maryland

**Abstract:** From an ecocritical standpoint, the *House of X* is an original concept, particularly in the way that Krakoa (the environment) and mutants (the population) interact. This story challenges popular ecocritical theory by creating an environment that dictates the materials and resources available to the mutants rather than existing as a passive backdrop that the population can conserve or ravage as it sees fit. Although *House of X* focuses on how mutants in Marvel Comics establish their own society and become recognized as a sovereign nation, their success in doing so is completely reliant on Krakoa, the island where they establish their statehood. Moreover, the mutants who work to establish this new society defy traditional gender associations both as a part of and apart from nature. These factors make *House of X* stand out among other superhero comics in its depictions of the relationship between Krakoa and its population and the representations of gender within this environment.

**Keywords:** *House of X*; Mutants; ecocriticism; gender; comics; X-Men

Since their first issue, the *X-Men* comics have served as an allegory for civil rights. In over fifty years of publication, the X-Men have moved from solely illuminating issues of race in America to exploring issues concerning LGBTQ+ rights and religious tolerance (Shyminski 2006, Lund 2015). The team has a rogues' gallery of enemies such as Bolivar Trask, William Stryker, or Donald Peirce who want to eradicate mutantkind through some sort of religious- or politically-based genetic cleansing. Although some mutants find sanctuary in Charles Xavier's (and subsequently the Jean Grey) School for Gifted Youngsters, these mutants live in constant fear of being persecuted outside of the school because they are different from the rest of society. Echoing the ideas of activists such as Marcus Garvey, Booker T. Washington, and to a lesser degree, W.E.B. DuBois, some X-Men writers have created situations where some mutants create their own societies separate from humans. At different points in the X-Men's history, places such as Asteroid M and the Savage Land have been designated as mutant sanctuaries representing small sects of mutantkind. 2019's *House of X* differs in that it actually establishes a sovereign mutant nation that is completely separate from and unpopulated by humans on the island of Krakoa. This migration to Krakoa represents a grand turning point for mutants in Marvel, for this is the first time that mutants are no longer subject to a society created

by humans. Instead, mutants birth their own separate society and all of its trappings. Because Krakoa has its own will, the mutants who reside there must live as a part of the island and apart from the island because the two states are intertwined.

For the mutants of Marvel Comics, the environment of the island of Krakoa is paramount in determining how its population flourishes or withers in *House of X*. Through an ecocritical lens, one can see how, in the *House of X* storyline, Krakoa (the environment) and mutants (the population) interact. The Krakoan environment dictates the materials and resources available to the mutants rather than existing as a passive backdrop that the mutant population can cultivate, conserve, or ravage as it sees fit. Although *House of X* focuses on how mutants in Marvel Comics establish their own society and become recognized as a sovereign nation on Krakoa, their success in doing so is completely reliant on Krakoa, the island where they establish their statehood. To a lesser extent, Krakoa also helps mutants challenge the patriarchy of human societies by establishing a mutant community based on an individual's ability as a part of and apart from nature. These factors make *House of X* memorable among other superhero comics in its depictions of the relationship between Krakoa and its population, as well as the representations of gender within this environment.

## The Mutant Land, continued

## The Origin of Krakoa

*Giant Sized X-Men #1* is a seminal issue for comic book fans because it marks so many indelible “firsts” in the X-Men history. This issue includes the first appearance of Colossus, Nightcrawler, Thunderbird, and Storm, most of whom have been immortalized to the general public in cartoons and cinema. It is also the first issue where Banshee and Wolverine join the team. Lesser known, though, is the enemy that these X-Men fight in the issue—the mutant island of Krakoa. Although Krakoa has not been developed much compared to other X-Men villains such as Magneto, Mister Sinister, or Apocalypse, it does serve as the cornerstone of the *House of X* storyline.

When first introduced in *Giant Sized X-Men #1* in 1975, Krakoa was an enigma to the X-Men. In this issue, writer Len Wein and artist Dave Cockrum tell the story in four parts. Parts I and II show Xavier recruiting a new mutant team for a mission: to rescue three of the original X-Men from a super powerful mutant on the island of Krakoa. In Part III, the X-Men begin to experience mysterious phenomena on the island. First, while walking through a jungle on the island, Cyclops and Thunderbird are ensnared by giant vines. Struggling, Thunderbird exclaims, “The vines—They’re alive—!!” (24) A couple of pages later, Storm (Ororo) and Colossus are almost crushed by a landslide of rocks. Fleeing the scene, Colossus observes, “This landslide cannot be outrun, Ororo! It has changed direction to follow us!” (26). At the end of Part III, the X-Men realize that, as Angel asserts: “We came to the island to look for a mutant...but the mutant is the island itself! (29).

Part IV then begins with a narrative history of Krakoa, explaining how it gained its sentience:

The sun-burst brilliance of an early atomic test... whose unseen radiation permeated every living organism here [on Krakoa]...until they grew linked in a colony intelligence that gave the island a life of its own...[B]ut Krakoa grew hungry then...a hunger barely appeased when the X-men arrived upon the scene...Krakoa fed upon their mutant energies and

became hungrier still...Thus, it released one X-Man and sent him forth to find more food...”

(Wein and Cockrum, 30)

In this passage, the reader sees that Krakoa is not a simple organism that needs to feed but is instead intelligent enough to set a trap for the X-Men by releasing one of them to attract more. Its sentience is then corporealized in a distorted, cthulhu-esque mound of rock and fauna that emerges from the island’s terrain. Here it is revealed that the collective intellect of Krakoa’s fauna and flora enables it to control every aspect of its wildlife and environment. It is only through the combined power of all of the X-Men fighting against it physically—and Professor Xavier fighting it psychically that the X-Men defeat Krakoa and escape. In this fight, the island psychically defeats Xavier (the most powerful telepath in the world) and almost kills all of the other X-Men. After *Giant Sized X-Men #1*, Krakoa does not function as a major character in the Marvel Universe, only making a handful of cameos, many of which are actually revealed to be clones or offspring of Krakoa rather than the original creature.

It is not until 2019’s *House of X* that Krakoa becomes a literal and figurative cornerstone for the X-Men. *House of X* and *Powers of X* are two miniseries written concurrently to tell the same story from different timelines.<sup>1</sup> They show how Charles Xavier (leader and founder of the X-Men) has laid the groundwork to create a sanctuary country populated entirely by mutants since the year that he founded the X-Men. Series’ creators, writer Jonathan Hickman and artists Pepe Larraz and R. B. Silva, show numerous flashbacks of Xavier visiting Krakoa in the past decade, attempting to understand it, communicate with it, and negotiate with it to become this mutant sanctuary. Reading *House of X* and subsequent X-titles through an ecological lens, it quickly becomes apparent that almost every major aspect of the mutant society of Krakoa is either directly or indirectly connected to the environment that Krakoa provides for that society. Evaluating the importance of the environment and ecosystem in *House of X*, the reader sees that even though Xavier has established the mutant society on Krakoa, the

## The Mutant Land, continued

island itself actually *controls* all of the major aspects of that society. This controlling factor makes it an integral part of the narrative—arguably, as much a part of the narrative as the mutants (other than Krakoa) themselves, making ecocriticism a uniquely effective tool for analyzing the symbiotic relationship between man- (or in this case mutant-) kind in this story.

Simply stated, ecocriticism concerns itself with studying “the relationship between nature and the physical environment” (Glotfelty 1996). However, ecocritics Erin James and Eric Morel expand this definition, demonstrating the ways that environments contribute to a story’s narrative: “Ecocritic[al] considerations of the more-than-human world and post human environments have much to add to recent narratological analyses of representations of the nonhuman in narratives. Narrative theorists have long argued that, while not every narrator is human, all narrators by necessity have human characteristics” (James and Morel). James and Morel point out that ecocriticism recognizes non-human elements and entities that claim personage in a story.<sup>2</sup> Whereas this likeness does coincide with the idea that narratological vehicles maintain human characteristics, the same cannot be said for Krakoa which, despite its sentience and impact on the narrative, demonstrates almost no human characteristics. The mutants who inhabit Krakoa rely on it for more than just sustenance and materials typically taken from an environment; they also rely on Krakoa for their language, shelter, and transportation, making it a driving force of the *House of X* narrative.

### Krakoa’s Purpose

If one accepts Lawrence Buell’s claims that ecocriticism has come in three waves, and that the last two of these waves have focused on social justice and postcolonial critique, then the methods by which an ecocritical lens can be applied to *House of X* become rather obvious (Buell 2001). In *Postcolonial Ecologies: Literatures of the Environment*, however, Elizabeth DeLoughrey and George Handley warn that “ecocriticism is particularly vulnerable to naturalizing dominant forms of environmental discourses, partic-

ularly those that do not fundamentally engage with questions of difference, powers, and privilege” (DeLoughrey and Handley 2001). Significantly, *House of X* dedicates many panels and a great deal of space to addressing differences, powers, and privilege by depicting the formation of a new government on Krakoa that is centrally sensitive to these factors. Unlike many other texts that focus on environmentalism and ecosystems, Jonathan Hickman makes the environment itself a determining force dictating power and privilege in how it cooperates with the mutant society.

Clearly, the idea of mutants expatriating themselves to create a society made by and for their race meets both of Buell’s criteria. Unlike previous X-Men story arcs that focus on the persecution and genocide of mutants in a human world, *House of X* offers insight into how mutants establish their own society apart from humanity.<sup>3</sup> Of course, the mutants’ colonization of a deserted island *should* have repercussions. They *should* impact the environment, and the environment should impact them. In addition, Markka Lehtimäki suggests that in any environment, humans (and by extension, mutants) “shape and are shaped by their engagement in the natural world” (Lehtimäki 2013). In most cases, people attempt to bend the environment to their will, farming it for material and mining it for resources. “Deep ecology” critics, however, feel that humans should appreciate nature for its inherent value rather than solely for what it can provide (Naess 1989). Uniquely, *House of X* creates circumstances in which it is impossible for Krakoa’s mutant inhabitants to manipulate or exploit the environment because Krakoa maintains complete control over its environment, willingly providing the mutants with materials and resources. In the twelve issues of *House of X* and in subsequent titles, Hickman and other writers show how mutants declare independence through exclusive trade, create laws and punishment, establish mass transit routes, identify a national language, and negotiate property rights—none of which would be possible without the island of Krakoa providing the means and/or permitting them to do so.

## The Mutant Land, continued

### Trade and Sovereignty

In the first issue of *House of X*, Xavier arranges a meeting between human ambassadors from the United Nations and mutant ambassadors from Krakoa to explain the society that the mutants have created. This meeting also serves as a step toward the world's recognition of Krakoa as its own nation. As the human ambassadors wait for the meeting to begin, they discuss a proposal that Charles Xavier has given them. This proposal states that in exchange for its sovereignty, the mutants of Krakoa are willing to provide allied countries access to the island's drugs. Although readers are not privy to the proposal, the human ambassadors divulge what the drugs can do: "A drug that extends human life five years, another that prevents disease of the mind and a third that is the most effective, adaptive antibiotic the world has ever seen..." (*House of X #1*). A subsequent splash page in the same issue further explains that these drugs are actually flowers grown exclusively on and by Krakoa. This page explains that "The mutant island of Krakoa is not just home of mutants and seat of their nation-state, it is also the only known producer of the primary economic resources of the mutant nation." Beneath this explanation, the page lists the three previously mentioned "flowers" under the category "for humans." Later, the story reveals that the United Nations has voted to recognize Krakoa as a sovereign nation, but that some countries have rejected the trade of Krakoa's flowers because of political or ideological beliefs.

Whereas science fiction series such as *Dune* have made good use of the premise that a foreign land may produce resources that give one species economic power over another, *House of X* uniquely requires the land itself to be a willing participant in the production of said resources. There is nothing in the text to suggest that the mutants must actually farm the flowers. Contrarily, the text suggests that Krakoa produces the flowers at will and without limit. This willfulness means that Krakoa, not the mutants inhabiting it, controls the trade, economy, and diplo-

macy of the burgeoning mutant nation. While many science fiction stories revolve around the necessity of creatures working the land—either farming, mining, or digging for resources—*House of X* suggests in its panels that Krakoa produces its flowers without any cultivation or farming. Given Krakoa's power level as a mutant (as shown in *Giant Sized X-Men #1*), it would be nigh impossible for the mutants to force it to produce anything against its will. As such, if Krakoa were to decide to cease production of its indigenous flowers, the mutants inhabiting it would be unable to farm those resources, leaving them without their primary export and crippling their economy.

### Law and Punishment

*House of X* spends almost an entire issue demonstrating the ways that the new mutant nation establishes laws, rules, and punishments apart from those governing humanity. Rather than looking at topics of social justice and postcolonialism as they apply to mutants in the human world, *House of X* allows the reader to observe them contained entirely within the shores of Krakoa. In doing so, the story reveals Krakoa's impact on mutant law, and, conversely, the mutants' dependency on Krakoa to enforce those laws.

After Charles Xavier establishes a "Quiet Council" of mutants to govern Krakoa, he proposes the concept of laws of the people.<sup>4</sup> After pages of debate and in Orwellian fashion, the Quiet Council creates three principle laws: 1) Make more mutants, 2) Murder no man, and 3) Respect this sacred land [Krakoa]. The first law dictates that any mutant who is killed or has been killed unnaturally is resurrected by mutants called "The Five," who possess the collective power to do so. The second law applies (literally) to humans (*Homo sapiens*) with the caveat that all mutants who commit crimes outside of Krakoa are to be extradited and tried by the Quiet Council because human jurors do not constitute a jury of "peers." The third law is self-evident. As these rules are established, the Quiet Council tries its first case against a quasi-feral mutant named Sabertooth. While Sabertooth has killed thousands of humans and mutants alike without re-

## The Mutant Land, continued

morse, this particular trial involves the recent murders of human soldiers when his team's orders were clear: "no casualties." As Sabertooth is being tried, he demonstrates his lack of remorse once more by swearing that he will kill the next three generations of the Quiet Council's members to guarantee that their bloodline becomes extinct.

The Quiet Council unanimously finds Sabertooth guilty but recognizes a problem. As Professor X points out, if it sentences him to death, then, by its own first law, it must order his resurrection. The Council has previously declared that Krakoa does not and will not harbor any prisons. Specifically, this declaration means that the Quiet Council will not authorize the construction of any prisons on Krakoa—and not that the island itself is intolerant to their presence. The Council also recognizes that it cannot send Sabertooth back among the humans for fear that he will kill humans or that humans will kill him; Sabertooth literally declares the former ultimatum earlier in the story. After presenting these conundrums to the members of the Council, Xavier instructs Cypher to ask Krakoa to carry out an unstated punishment, demonstrating that Xavier had already come to an agreement with Krakoa about how mutants found guilty of capital crimes should be punished.

In response to this unofficial sentence, vines shoot out of an abyss leading into Krakoa's depths—a scene reminiscent of its previous attempts at trapping Cyclops and Thunderbird in its first appearance. These vines wrap around Sabertooth and pull him into the void, where he will be in "Stasis—deep inside Krakoa. Alive but immobile—aware but unable to act on it..." (*House of X #6*). Xavier does not explain what administers this stasis, but by Krakoa's very nature, the reader can assume that something among the flora and fauna of its ecosystem is responsible. The Council's decision is only made enforceable because Krakoa chooses to detain Sabertooth with its vines, pull him into his abyss, and sedate him indefinitely with its toxins. Furthermore, although Xavier explains that Sabertooth's sentence is "forever...for that is how long mutant law lasts" or until the Council

sees fit to release him, Krakoa is the only member of the Council that can actually release Sabertooth from stasis. There is no evidence suggesting that any other member of the Quiet Council could get Krakoa to imprison or release him in opposition to its own will.

### Transportation

At the beginning of *House of X*, Hickam and Larraz show panels of X-Men planting strange, purple flowers in the soil of Westchester, New York; Washington, D.C.; the Savage Land; Jerusalem; the Earth's moon; and Mars. On the following page, the narrative box indicates the present with the word "Now," and the panel behind it shows that the flower planted in Washington, D.C. has bloomed into a giant floral habitat that has consumed an entire building. Inside that habitat, two X-Men, Stepford Cuckoos Esme and Sophia, emerge from a glowing, purple gateway encased in flora (*House of X #1*). A few pages later, the reader sees the X-Man Marvel Girl leading mutant children through the gateway in Westchester to Krakoa. A young mutant asks her if anyone can travel through the gateway, to which Marvel Girl replies, "No. Not everyone. Any mutant can, of course. Krakoa recognizes its own. But anyone or anything that isn't a mutant must be accompanied by one—and even then we have to ask permission. You see, Krakoa is very protective, and it's always important to have good manners." Marvel Girl's explanation reinforces the assumption that the island itself controls who can and cannot enter the gateways. In a subsequent spin-off title, *The Marauders*, Krakoa denies mutant and X-Man Kitty Pryde entry through the gateway, proving that it will deny mutants as well as humans without explanation if it so chooses, and that transportation to and from Krakoa is purely at the island's discretion.

*House of X #1* also suggests that Krakoa's gateways are somewhat arbitrary by implying that they may not go to the same place every time. When a human ambassador asks one of the Stepford Cuckoos,<sup>5</sup> "How do you know which door leads where?" the Cuckoo replies, "I won't lie, at first it was easy to

## The Mutant Land, continued

get turned around. Familiarity helps, but just to be safe, we asked Krakoa to grow some signs so no one would lose their way.” The Cuckoo’s confusion affirms the disorienting nature of the transportation gateways and hints at how inconsistent they may be. One is left to wonder if Krakoa itself actually determines which gate a mutant will travel to once they enter.

Through this exchange, Johnathan Hickman depicts Krakoa not only as the gateway that enables mutants to travel across the world and through space, but also as the arbiter of who can use these gateways, whether mutant or not. Moreover, it is implied that Krakoa also determines the mutants’ destinations once they pass through the gates. Like the nation’s trade and commerce systems, Krakoa—and not its inhabitants—facilitates, determines, and maintains the mutant’s mass transportation and travel systems.

### Language

Perhaps the most unique aspect of *House of X* is the island of Krakoa’s contribution to the language of the nation. In *Giant Sized X-Men #1*, the X-Men can clearly understand Krakoa, which is speaking English. This event, however, was later retconned in *X-Men: Deadly Genesis* (2005-2006), where author Ed Brubaker has Professor Xavier explain that he psychically modified the X-Men’s memories of fighting Krakoa for the first time, making them think that they heard the island speaking English, when, in fact, they did not comprehend its language. In doing so, Brubaker establishes that Krakoa does have its own language, but that humans and most mutants simply cannot comprehend it.

In the aforementioned incident from *House of X* where the Cuckoo tells the human ambassador that the mutants asked Krakoa to grow signs on the gateways, she points to a cluster of symbols over the gate. The ambassador asks, “Am I supposed to be able to read that?” to which the Cuckoo replies, “Of course not. It says nothing. It’s gibberish” (*House of X #1*). In the next panel, Quiet Council member Mag-

neto explains, “Well, it’s certainly not Russian, English, French or Chinese...but it is a language. Ours. It’s Krakoa, and every mutant who lives among us has it telepathically imprinted in their cerebral cortex the day they arrive.”

The story later reveals that the Krakoa language is not actually the language that the island itself “speaks.” This revelation is unearthed in *Powers of X #4* during a flashback sequence when Professor Xavier takes the mutant Cypher to Krakoa for the first time. Cypher’s mutant ability enables him to understand and communicate in any language after even very brief exposure to it. When Krakoa “speaks,” its speech bubble is filled with squiggly lines, confirming its language’s incomprehensible nature. Cypher analyzes the language, claiming, “No fricatives, which makes sense, but the layering is dense...more than I would normally expect. I’m picking it up, but I need more.” This panel illuminates how complicated and seemingly unintelligible Krakoa’s language is, as even Cypher’s powers do not even permit him to understand the language immediately. Eventually, Cypher does gain a broad understanding of what Krakoa is communicating, and the scene ends with Professor Xavier tasking Cypher with creating a new language based on the island’s own “tongue.” Even with his mutant power, Cypher tells Xavier that the task is “ambitious” and that the phonology and syntax will be complicated, adding, “the ecosystem is an unknown, so that’ll be tricky.” This panel suggests that the ecosystem of Krakoa itself is a part of its language.

The reader knows that Cypher is successful in creating a language (which shall be referred to as the “mutant Krakoa” language) based on the language that Krakoa “speaks” (or at least expresses in some dialectical form), as the mutant Krakoa’s symbols can be seen in *House of X #1* when the Cuckoo tells the ambassador that the sign over the gateway is “gibberish.” Eventually, Marvel would produce a decoder for the mutant Krakoa language, but this decoder does not explain anything about the language; it only shows the phenomes that each sym-

## The Mutant Land, continued

bol represents. Using the Krakoan decoder shown in *House of X #3*, one can see that, in fact, the Cuckoo is correct, as the literal translation of the symbols over the gate is “G·A·L·M.” The incomprehensible nature of Krakoa’s language is further evidenced by a page of notes in *House of X #3*: “It’s important to note that [mutant] Krakoan is a manufactured language and not the native language of Krakoa the living mutant island. The language of Krakoa is untranslatable, and almost all human/mutant brains are incapable of comprehending it. The only known exception is Cypher.” This quote shows that although the island has its own language, Cypher created the mutant Krakoan language to be penetrable (yet still incredibly difficult to learn) for the average mutant.

Witnessing the challenges of teaching the language to all the mutants, Xavier instead chooses to psychically implant it into the minds of all of the mutants who live there. Still, without Krakoa and its language—which is undoubtedly intertwined with its ecosystem—Cypher would not have the foundation for a language exclusive to mutants.

### Property and Property Rights

The mutant population’s “habitats” are not traditional brick and mortar; their frames and infrastructures are actually made from bloomed flowers that Krakoa produces—flowers that can seemingly flourish in any environment, as demonstrated by the habitats that it creates on the Earth’s moon and on Mars. Moreover, these habitats seem capable of providing an atmosphere within them that is suitable for humans and mutants to live. These habitats serve many functions for the inhabitants of Krakoa, from living quarters and businesses to training facilities and transit stations. All of these habitats have names, and some of these names reflect the people who live in or run a business in the habitat. For example, the “House of Summers” hosts Scott Summers (Cyclops) and his family members from Earth 616 (the main earth and timeline of Marvel Comics) and other Earths, while “Bar Sinister” is a tavern/ lounge run by Mr. Sinister. Despite the association between some mutants’

names and the habitats that they populate, however, the notion of owning or controlling property on Krakoa is complicated. Because these habitats are a part of or come from Krakoa’s ecosystem, they are considered a part of Krakoa, which means that the island maintains ownership of all of its habitats, including annexed locations that are not physically on the island. The text also suggests that, through the teleportation gates, Krakoa can choose to grow or wither the flowers that create or destroy these environments at will, regardless of whether they are on the island or not.

This idea of property rights is addressed in *House of X #6* when the Quiet Council is discussing the political matters that need to be addressed. One council member, Sabastian Shaw, states, “Property rights. Wealth. Currency. A few of the things man clearly got right. I have quite a few ide—.” Before Shaw can finish his sentence, however, Cypher interrupts him: “Excuse me. Small point that needs to be made. Krakoa is alive. Not a place, or a biome—a person. Fauna, not flora. So I’d be careful how hard you lean into the whole property rights thing.” In this panel, Cypher is juxtaposed with the other Quiet Council members to stark effect, revealing the obvious difference in their relationships with the island. Whereas all of the other council members are sitting in fabricated chairs with hard lines, Cypher lazily reclines in a bed of soft foliage, showing both his connection with and representation of Krakoa as its only translator.

In the next panel, another council member, Storm, settles the notion, claiming, “But the idea of home comes with possession baked into it, doesn’t it? Perhaps if you want to own a place, it has to be...out there. In the world.” This exchange is interesting in that it reveals three things. The first is that some mutants cling to human notions’ of property ownership. Even in the Krakoan nation, where all mutants are treated equally, some mutants desire economic gain over others. The second is that the voice of the interpreter for Krakoa—the one who understands it better than anyone—is quick to remind Shaw that Krakoa is unwilling to accept anyone’s ownership of a piece

## The Mutant Land, continued

of itself. It should be noted here that since Cypher first appeared in *New Mutants # 13* (1984), he has generally been portrayed as timid and insecure because his power is more passive than other X-Men's more overtly physical powers. Contrarily, Sabastian Shaw has been consistently portrayed as an arrogant and aggressive villain since his first appearance in *Uncanny X-Men #129* (1980). The idea that Cypher would not only speak up, but also interrupt Shaw in the middle of a sentence, shows his insistence that Krakoa does not approve of Shaw's proposal. The third notable observation is that Storm dismisses the idea quickly, suggesting that if mutants want to own property, then they should buy it outside of Krakoa. Considering that Storm's powers (controlling the weather) are attuned to nature, her statement leaves the reader to wonder, "Is she worried that Krakoa will retaliate against mutants for continuing to entertain Shaw's idea?" Although nothing in this dialogue suggests that Krakoa would do such a thing, its history in Marvel Comics has provided ample evidence that it can be powerful and destructive if it so chooses.<sup>6</sup>

Whether or not Krakoa would actually retaliate is irrelevant to the Quiet Council's fear that it might, reflecting their subconscious knowledge of nature's sublimity. This exchange underlines the material reality that, despite the mutants' use of Krakoaan habitats for their own means, the island itself controls their property entirely, leaving them with no true claim to the land or the habitats in which they reside. In essence, their shelters are at the whim of their environment, which controls them absolutely.

The aforementioned examples highlight the ways that ecocriticism underlines Krakoa's agency, as the environment that it provides—that it is—dictates practically every aspect of the new mutant country. Delving further into ecocriticism, particularly ecofeminism, also foregrounds the ways that the Krakoaan environment helps mutants deviate from stereotypical representations of men and women in *House of X*. Such stereotypes often position society and masculinity in opposition to the environment, leading to the en-

vironment's destruction (Warren 2000, Heis 2008). Other theories highlight the longstanding association between women and nature, as explained by Karla Armbuster: "yet another dualism: an uncomplicated opposition between women's perceived unity with nature and male-associated culture's alienation from it" (Armbuster 98). Claudia von Werlhof builds on Armbuster's ideas, claiming that capitalism in and of itself assumes a deep-rooted patriarchy and male hegemony. She further asserts that man's quest for technology is unbridled in his pursuit of wealth and power in capitalism (Werlhof 2007). In short, the idea of nature as feminine and progress as masculine permeates—and to our knowledge, predates—literature. However, Jonathan Hickman demonstrates that all mutants are equal on Krakoa, as their functions in society are dictated by their powers rather than their genders.

In some instances, readers do see male characters associated with progress in the form of technology. For example, Mr. Sinister, a mutant geneticist, is shown in his bar, which is rife with monitors and mechanical devices; and Forge, a mutant builder, is tasked with building a machine that can store every mutant's memory. However, these representations are rife with more contradictions than consistencies, especially in consideration of the various roles that some of mutants ultimately play in the larger narrative.

The most apparent example of such a figure is Cypher. Even though Cypher is a computer genius and has a "techno-organic" alien living on his arm, he is obviously more closely connected to the environment of Krakoa than any other mutant. Similarly, the mutant Apocalypse, whose entire body consists of technological armor that bends to his will, is often shown in a floral garden of Krakoa—especially in a subsequent title, *Excalibur Vol. 4*. Conversely, female mutants such as White Queen and the Stepford Cuckoos are relegated to settings that are unnatural, such as in a courthouse, in an embassy that is only partially floral, or at the Quiet Council table.

## The Mutant Land, continued

In all of these examples, the women are gathering intelligence, giving orders, and dictating the state of affairs outside of Krakoa. In Krakoa, stereotypical male hegemony is uprooted as male and female characters are depicted in environments that coincide with their missions and/or powers rather than by their gender identities. It is also noteworthy that in the disagreement between Sebastian Shaw and Krakoa, the female character, Storm, lays the debate between two male mutants to rest by asserting that any mutant looking to own land—or partake in traditional capitalist ventures—should do so outside of the Krakoan nation. In this incident, Storm asserts her power while rejecting a patriarchal, capitalist system that Shaw seems to embrace because he is an upper-class, white man, as opposed to Storm, who is an African woman.<sup>7</sup>

Pepe Lazzar's and R.B. Silva's visual depiction of female mutants reflects the strength that they demonstrate in Jonathan Hickman's narrative and dialogue. Rather than running the risk of masculinizing these female characters, Lazzar and Silva gender the mutant women's wardrobes and retain the characters' femininity without hypersexualizing them (May 2015).<sup>8</sup> Such is the case with White Queen and Marvel Girl. In many of White Queen's appearances since her first appearance in 1980, the character is dressed in a white leather corset with white bikini bottoms (or a white leather teddy), white patent-leather thigh-high stilettos, and a white cape. Rather than dressing her in her traditional regalia, however, Lazzar and Silva depict the White Queen in either a white suit or in a dress and a white cape. These updated looks reflect her discriminating taste and power with high fashion rather than sexual fetish. Contrarily, Lazzar and Silva revert to Marvel Girl's original costume, de-fetishizing her appearance. For all of her appearances in *House of X*, Marvel Girl is clad in her original 1960s mod minidress—complete with belt and three-quarter length sleeves—rather than the form-fitting, spandex catsuit in which she has been depicted for years. Both characters' wardrobes in *House of X* are irrefutably (traditionally) feminine and simultaneously reaffirm the women's gender without objectifying them.

Their clothes, and the clothes shown on other female mutants, do separate them from the male mutants, who tend to keep their form-fitting spandex and leather hero outfits. However, even though genders are designated by the clothes that the mutants wear, their roles in the story reflect their equality to one another. Moreover, even though the artists gender mutants, that gender does not determine a connection to or disconnect from nature. *House of X* shows both male and female characters who live in the community and/or defend the Krakoan environment, thus reaffirming the equality of all mutants living on Krakoa.

When *X-Men Vol. 5* ended, Marvel Comics promised that mutants would never be the same in their pages. *House of X* made good on this promise, but not by re-booting the universe as Marvel had done numerous times in the past couple of decades. This time, Marvel introduced a drastic philosophical shift in its champion mutant team, the X-Men. Historically, X-Men comics had been sympathetic to human rights movements, starting with civil rights in the 1960s (Shyminsky 2006, Darowski 2014). The X-Men have served as an allegory for the struggles of marginalized humans in society, but they have also reflected the philosophies of peaceful protest espoused by leaders such as Martin Luther King, Jr. In *House of X*, however, the mutants adopt a separatist philosophy, establishing their own nation that only humans can access. Readers see X-Men aligning with their enemies, and in doing so, adopting more surreptitious and emboldened tactics to cajole humanity into recognizing the sovereignty of the nation of Krakoa.

Using an ecocritical lens makes apparent the extent to which none of the Krakoa's sovereignty would be possible without the environment produced by the island itself. *House of X* repeatedly demonstrates that every aspect of society—and even living—is dictated by Krakoa's will. Being designated as a mutant itself, Krakoa is tolerant and accommodating of its mutant inhabitants, but it does have its limits. Various incidents throughout the story show that Krakoa will discriminate against potential occupants by denying them access through one of its teleportation gates,

## The Mutant Land, continued

or by making the seas around it too turbulent to navigate. It also refuses to allow anyone to claim ownership on its land; instead, it permits mutants to use its land and live in its habitats whether or not they are located on the island itself. This environment's ability to directly and consciously control its resources is unique in science fiction, particularly in comic books. Although the entire *House of X* storyline indicates that mutants feel comfortable with Krakoa, the environment could literally change on a whim.

The story ends on a high note, so to speak. The mutants are having a party to celebrate their victory and independence, enemies and frenemies are sharing beers, and mutants with light/explosive powers are firing them into the air like fireworks. Perhaps what is most unique about *House of X* is not that it changed the X-Men forever—a promise made by comic book writers at least once a year—or how it finally gave mutants the safe-haven for which they had been searching for years, but in how it promoted the environment to the forefront of the story. For the first time, a major story arc in the X-Men universe is completely reliant on the environment itself rather than the mutants and their spectacular powers. One would be hard-pressed to argue that *House of X* can truly be appreciated or even criticized without viewing it through an ecocritical lens. Such a lens illuminates how necessary it is for the mutant nation to respect and understand Krakoa, to become a part of it rather than apart from it, and to recognize all that it does for them in this story. Without this respect and understanding, their existence and new found sovereignty could be taken from them in an instant.

### Notes

<sup>1</sup> Because *House of X* and *Powers of X* were published concurrently as parts of the same storyline,

this article uses “House of X” to refer to both series unless a specific issue is referenced.

<sup>2</sup> Marvel distinguishes the difference between humans as *Homo sapiens* and mutants as *Homo superior*, a separate species; however, for the sake of argument, mutants in Marvel Comics tend to be portrayed as almost indistinguishable from humans in their thoughts and speech.

<sup>3</sup> These topics are the clear focus of story arcs such as “Days of Future Past” (1981), *God Loves, Man Kills* (1982), “X-Tinction Agenda” (1990), and *House of M* (2005).

<sup>4</sup> Krakoa is technically listed as a member of the Quiet Council, with Cypher as its translator.

<sup>5</sup> The Stepford Cuckoos (Cuckoos) are identical, dress the same, and share “hive mind,” so unless the author designates which one is speaking by name, it is unlikely that the reader can distinguish between them.

<sup>6</sup> In *Giant Sized X-Men #1*, Krakoa defeated and fed off of the X-Men.

<sup>7</sup> Originally, Shaw has held the affluent rank of “Black King” in a mutant-controlled investment group called “The Hellfire Club.” In the Hellfire Club, Shaw was responsible for all of its black-market dealings. On Krakoa, he is placed as second in command of “Hellfire Trade Company,” which controls all of Krakoa's imports and exports.

<sup>8</sup> The author recognizes modern definitions of gender but refers to the mutant population on Krakoa in binary terms because the prominent characters of the story identify as male and female.

## The Mutant Land, continued

## References

- Armbruster, K. (1988). "Buffalo Gals, Won't You Come Home Tonight": A Call for Boundary-Crossing in Ecofeminist Literary Criticism. In G. Gaard & P. D. Murphy (Eds.), *Ecofeminist Literary Criticism: Theory, Interpretation, Pedagogy* (pp. 97-122). University of Illinois Press.
- Brubaker, E. (w), Hairsine, T. (p), & Justice, K. (i)]. (Nov 2006-May 2007). *X-Men: Deadly Genesis #1-6*. Marvel Comics.
- Buell, L. (1995). *The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture*. Harvard University Press.
- (2001). *Writing for an Endangered World: Literature, Culture, and Environment in the US and Beyond*. Harvard University Press.
- Claremont, C. (w), Buscema, S (p), and Mandrake, T. (i)]. (1984, March). *School Daysze: New Mutants v1 (#13)*. Marvel Comics.
- Claremont, C. (w), Byrne, J. (w, p) & Austin, T. (i), (1980, January). *God Spare the Child: X-Men v1 (#129)*. Marvel Comics.
- Darowski, J. J. (2014). *X-Men and the Mutant Metaphor: Race and Gender in the Comic Books*. Rowman & Littlefield.
- DeLoughrey, E. & Handley, G.B. (2001). *Postcolonial Ecologies: Literatures of the Environment*. Oxford University Press.
- Glotfelty, Cheryll. (1996). Introduction. *Literary Studies in an Age of Environmental Crisis*. In Glotfelty, C. & Fromm, H. (Eds). *The Ecocriticism Reader: Landmarks in Literary Ecology*. University of Georgia Press.
- Heise, Ursula. (2008). *Sense of Place, Sense of Planet: The Environmental Imagination of the Global*. Oxford University Press.
- Hickman, J. (w) & Lazzar, P. (p)]. (September--December 2019). *House of X v1 (#1-6)*, Marvel Comics.
- Hickman, J. (w), Silva, R. B. (p, i) and Di Benedetto, A. (i)]. (Sept. -- Dec., 2019). *Powers of X v1 (#1-6)*. Marvel Comics.
- Lehtimäki, M. (2013). Natural Environments in Narrative Contexts: Cross-Pollinating Ecocriticism and Narrative Theory. *Storyworlds: A Journal of Narrative Studies* 5, pp. 119-41. doi:10.5250/storyworlds.5.2013.0119
- Lund, M. (2015). The mutant problem: X-Men, confirmation bias, and the methodology of comics and identity. *European journal of American studies* 10(2). <https://doi.org/10.4000/ejas.10890>
- May, C. (2015, June 25). The Problem with Female Superheroes: From helpless damsel to powerful heroine, but still hypersexualized. *Scientific America*. [scientificamerica.com](http://scientificamerica.com).
- Naess, A. (1989). *Ecology, Community, and Lifestyle*. Ed. David Rothenberg. Cambridge University Press.
- Rosenberg, M. (w), Messina, D. (p)]. (2019, September). *We Have Always Been: Part 6. Uncanny X-Men v5 (#22)*. Marvel Comics.
- Shyminsky, N. (2006). Mutant Readers Reading Mutants: Appropriation, Assimilation, and the X-Men. *International Journal of Comic Art*. 8(2), pp. 387-405.
- von Werlthof, C. (2007). No critique of capitalism without a critique of patriarchy! Why the Left is no alternative. *Capitalism Nature Socialism* 18(1), pp. 13-27. doi: 10.1080/10455750601164600
- Warren, K. J. (2000). *Ecofeminist Philosophy: A Western Perspective on What It Is and Why It Matters*. Rowman.
- Wein, L. (w), Cockrum, D. (p, i), and Iro, P. (i)]. (1975, May). *Second Genesis. Giant-Sized X-Men v1 (#1)*. Marvel Comics.

Background I by Julia Slocomb Dluzen



“Background” was created from a compilation of photos from Garden of the Gods, in Colorado, and a full moon seen from Deep Creek Lake, Maryland.

## Books in Review

Edited by Christy Tidwell & Bridgitte Barclay

*Gender and Environment in Science Fiction.*

Lexington Books, 2018, hb, 215 pp, \$39.99

ISBN: 978-1-4985-8057-1

Reviewed by: Sarah Powell Price

This carefully curated collection of essays by Christy Tidwell and Bridgitte Barclay examines the unique and fascinating ways that nature and gender interact within the science fiction genre. The collection engages readers to question what is both possible and natural in how intricately humans, animals, and their environments are connected. In turn, this prompts questions about how human and nonhuman representations and interactions provide a deeper understanding of gender, sexuality, social norms, and the very definition of autonomous self.

The book surveys a wide range of science fiction works, including examples from the 1820s through the mid-20th century, as well as more contemporary stories. Within these works, we encounter many of the expected problematic social narratives within science fiction, including how women or non-traditional genders are represented, portrayed, and vilified within a world of hypermasculinity. Rather than simply extricate and dissect the flawed patterns of stereotypes and misogyny, Tidwell and Barclay isolate ways in which the modern feminist and LGT-BQ+ audiences can use interpretive and subversive techniques such as “Camp” (the idea of embracing works as over-the-top irony, frivolity, and artful impertinence) to reclaim control of the narrative.

Split into four intersecting parts, Barclay and Tidwell have selected essays that address a gap in scholarship between the subgenres of environmental sci-fi and feminist sci-fi through a series of academic, intersectional conversations.

Part I, “Performing Humanity, Animality and Gender,” focuses on depictions of woman-animal hybrids, artificial intelligences, “technologies personified and

gendered as female,” and other inter-species embodiments of femininity. This section’s overarching concern is how ideas and interpretations of natural gender in science fiction are inextricably intertwined with the environments in which they exist, and how control of these environments (or lack thereof) can have, quite literally, monstrous consequences, such as those illustrated in *Wasp Woman* (1959), *Mesa of Lost Women* (1953), and the film, *Ex Machina* (2014), in which “[a]ttempts to control—and to control women in particular—are punished.”

In Part II, “Gendering the Natural World,” Tidwell and Barclay have curated essays by Fernando Berns, Juan Juve, and Steve Asselin that analyze narratives spanning from Mary Shelly’s 1826 apocalypse novels to *The Last Man to Womaneaters* (1958) and *The Gardener* (1974). The writers examine how these films engender the natural world and sexualize both nature’s antagonism and the species within nature itself.

Part III, “Contemporary Queering,” builds on the continued narratives outlined above to further explore the element of gender fluidity and queering within species and within nature. Using the novel *2312* by Kim Stanley Robinson as a point of analysis, the essay by Tyler Harper argues that terraforming and modifications of both gender and body can be interpreted within a framework where such transformations provide a freedom from gender strictures and environmental catastrophe.

Finally, Part IV, “We Don’t Need Another Hero,” explores science fiction stories that challenge human/non-human boundaries, hypermasculinity and its impact on gender binaries, including the tradition-

**Books in Review, continued**

al superhero narratives of Silver Age comic books such as *Aquaman* (1959) and *Metamorpho* (1965), as well as more modern feature films such as *Mad Max: Fury Road* (2015).

Even for the non-academic science fiction enthusiast, Barclay and Tidwell's book provides a strong LGBTQ+-positive interpretive lens that may enhance enjoyment of some of the more problematic works that it examines. While gender stereotypes and patriarchal depictions are all too easily amplified within even some of the more recent sci-fi narratives (including *Her* (2015) and previously cited *Ex Machina*), the overarching narrative of these collective essays and the conversations between them is that power also lies in the perspective of the beholder—in this case, the feminist and LGBTQ+ audience.

*Gender and the Environment in Science Fiction* contains a well curated and representative collection of essays that successfully tap into unexplored

avenues within the inextricable, interconnectedness of gender and the environment, while also re-centering the nuances and messages of the stories at their center. The book highlights the need for new narratives to override the traditional problematic themes within science fiction, replacing them with a storytelling approach that is both inclusive and intersectional.

Perhaps most impactful is how Barclay and Tidwell illustrate that problematic hegemonic masculinity within representations of gender and environments in science fiction may, in fact, be reshaped into unintended and even redemptive narratives supporting the feminist, LGBTQ+-positive, and ecocritical voice. Stories revisited at with a modern twist empower the informed reader to use interpretive strategies to re-structure and take control of the narrative while still embracing the unavoidable interconnectedness between gender and the environment.

## Books in Review

Edited by Gerry Canavan &amp; Stanley Robinson

*Green Planets. Ecology and Science Fiction*,  
Wesleyan University Press, 2014, pb, 312 pp, \$27.95  
ISBN (print) 9780819574282

Reviewed by Zaida Ortega

*Green Planets* is a critical anthology about science fiction literature in relation with ecology, nature, and environmentalism. The book was published six years ago but could not be more pertinent for current times. The Anthropocene is already showing us the consequences of decades of frenetic capitalism in the form of sea level increases, drought, illness, and species extinction. At the same time, we are beginning the most decisive decade to mitigate the worst impact of climate change, which will mark the future of all creatures, human and non-human. Moreover, a pandemic, possibly emerged from natural destruction and globalization, has suddenly stopped economic activity. In this context, the countries that contribute most heavily to the world's pollution have the opportunity to focus their economic stimulus plans to create a "new normal" that is truly sustainable, thus avoiding an accelerated spiral of uncontrolled environmental and health crises. Our current reality could well be part of a science fiction novel included in this book.

*Green Planets* is divided into thirteen chapters, organized in three parts, plus a compelling interview as an epilogue. The three parts allude to the categories that Samuel R. Delany borrowed from W.H. Auden: the New Jerusalem (an urban utopia where all problems are solved by science and technology), Arcadia (a pastoral utopia of nature and sustainability), and their dystopian/apocalyptic counterparts (the Bad City or Brave New World and the Land of the Flies, respectively). The chapters were contributed by fourteen different authors, including literary academics and researchers specializing in utopias and dystopias, environmental sciences and humanities, cultural theory and criticism, climate change, the intersection between

philosophy and ecological studies, and/or the role of the ocean and scuba diving in the humanities.

In the preface, Canavan highlights science fiction's role as an archive of imagination where science, story, and political struggle can converge and cross-pollinate. The metaphor of cross-pollination evokes interconnectivity in both nature, where networks of interaction are being simplified as a response to climate change, as well as in a globalized society, where we may find possible solutions to global problems through the cross-pollination of science, social justice, and politics, and based on international collaboration.

Part I, "Arcadias and New Jerusalems," starts with an essay (Chapter 1, Christina Alt) about the imagery of extermination, mass extinction, and ecological optimism in H.G. Wells' literature. In the wake of Darwin's theory of evolution, humans were positioned as another animal species, diminishing the idea of human dominance. However, with the emergence of new sciences at the beginning of the 20th century, ecology and related fields restored the public's confidence in humanity's ability to control the natural world. Christina Alt studies how the pessimism of the late 19th century and the optimism of the first decades of the 20th century are reflected in *The War of the Worlds* and *Men Like Gods*, respectively.

In Chapter 2, Michael Page expands these thoughts, reflecting on what he considers the major models of ecological thought in science fiction: an evolutionary optimism and an apocalyptic pessimism. To do this, he analyses four classic works of ecological science fiction, enriching the analysis with observations about ecology and how science

## Books in Review, continued

fiction provides us with a methodology for formulating alternative solutions to ecological challenges (p. 53). In Chapter 3, Gib Prettyman provides a compelling critique of Le Guin's utopian fictions, how she used Daoism to broaden ecological thinking beyond classic rationalism, and how her literary contributions (partly due to the prevailing patriarchal perspective) were usually not understood by Marxist critics.

Rob Latham (Chapter 4) presents a critique of the New Wave movement and their ecological imperialism and genocidal fantasies. He explains how the consolidation of the discipline of ecology after WWII with the concept of ecosystem and the study of biological invasions (p. 82) may promote the imagery of technocratic and ecological imperialism in science fiction. He also assesses the evolution of ecological thinking due to an increasing concern for the impact of human activities in the 1970s, considering ethics and militant environmentalism on one hand, with the romanticization of nature on the other.

Part II, "Brave New Worlds and Lands of the Flies," starts with an analysis of the metaphor of the "space-ship Earth" (Chapter 5, Sagine Höhler)—an imaginative experiment that places a population in a spaceship with limited resources—which proliferated in the 60s and 70s along with the flourishing of animal population ecology. This literature addresses specific issues about allocation of resources, social justice, birth control, and euthanasia, and is driven by classic philosophical questions about freedom and responsibility. In Chapter 6, Andrew Milner explores conquest and colonization in Australian ecological science fiction. He analyses George Turner's *The Sea and Summer* and how it promotes environmental activism and conservation in Australia.

Adeline Johns-Putra (Chapter 7) analyses how care and gender are related to a future of climate change. She summarizes the basis of ecofeminism—in its essentialist and critical forms—throughout science fiction literature from the 90s, and various critical concepts of the "ethics of care." She then uses Maggie Gee's *The Ice People* to deepen her reflections about the causes and consequences of climate

change through the lens of gender. In Chapter 8, Elzette Steenkamp continues in this vein by exploring the intersections of gender, race, and indigeneity in relation to the sense of identity in South African speculative fiction. She analyses Jane Rosenthal's *Souvenir* and Neil Blomkamp's science fiction film *District 9*, steeped in the notions of identity and belonging to a place or ecology and thereby seeking connection between humans and non-humans. In Chapter 9, Christopher Palmer addresses recent post-apocalyptic fictions to bring us a reflection on how the role of the apocalyptic imaginary can give us some comic sensibility now that we are facing many real-life catastrophes.

Part III, "Quiet Earths, Junk Cities, and the Cultures of the Afternoon," starts with a reflection (Chapter 10, Eric C. Otto) about how Paolo Bacigalupi's ecotopias stimulate our imagination about a better future. Chapter 11 (Brent Bellamy and Imre Szeman) reflects on the notion of "science faction," a new subgenre of apocalyptic fantasy, using Alan Weisman's *The World Without Us* to argue that imagining a world without humans can stimulate imagination, but can also lead to a pessimistic attitude that ends in inactivity and apathy about the human ability to solve these crises. Chapter 12's Timothy Morton reflects on globalization and capitalism through the story of the movie *Avatar* and how planetary awareness arises as a sense of ungraspable hyperobjects at the climax of evolution.

In Chapter 13, Melody Jue provides a brilliant reflection about oceans, depth, knowledge, and science, using Stanislaw Lem's *Solaris* and Greg Egan's *Oceanic* science fiction novels as vehicles. An ecofeminist way of thinking arises here again as Jue classifies the ocean as feminine and discusses its nature, depth, and the unknown, via the lens of male scientists and their difficulties in understanding it from the classical androcentric viewpoint. Jue's reflection makes us think about how scientists interpret the world, and translate it to knowledge production, inviting us to rethink how we position ourselves in relation to others.



**Books in Review, continued**

In the *Afterword* part, Canavan interviews Robinson about ecology, science fiction and crisis. Canavan recognized that in this century, we are in a divergence point, where either we achieve a sustainable society or we will cause mass extinction. They also discuss Robinson's latest book (*2312*), concerning a future that posits the consequences of not acting against climate change, bioethics and how humans value non-human organisms, how scientists should read more science fiction, and the relation between science and politics, among other topics.

In short, *Green Planets* achieves its stated ambition—as stated by Canavan in the preface (p. xii)—of following the key moments in the vital conversation between science, story, and politics that has weaved

together more than a century of thought experiments of ecological science fiction. I believe that this anthology will also help further “cross-pollination” between ecologists and science fiction writers, critics, and readers.

## Books in Review

Craig Russell

*Fragment*

Thistle-down Press, Paperback, p220, \$18.27

ISBN 1771871113

Reviewed by Elizabeth Diago-Navarro

Almost premonitory, Craig Russell's cli-fi novel *Fragment* approaches hot topics that populate the newspaper covers today. Climate change, political interference, and distrust in science are echoed in the fiction of *Fragment*, moving the conscience of the reader as they move public opinion in real life.

The plot begins with polar climatologist Kate Sexsmith explaining her research during a TV interview and pointing out that major glaciers in Antarctica are expected to make a major advance, which bears the risk of triggering an avalanche falling into the Ross Ice Shelf. The interview is abruptly interrupted and the researcher and two other scientists from the Kiwi's Scott Base manage to escape certain death when the Ross Ice Shelf breaks off, sending a massive fragment of ice the size of France into the ocean. Although ice shelf melting in Antarctica is not usually perceived as a consequence of climate change by the general public, in recent years, scientists have been observing and documenting such events. In the novel, the ice fragment threatens everything it encounters on its path, killing over 2,000 people in the U.S., McMurdo Station, and pretty much all of the marine life that crosses its trajectory. The fragment is picked up by the Eastern Current of the South Atlantic and navigates around the world.

Several plot lines emerge in the book thereafter. On one side, scientists are able—for the first time—to decipher the language of blue whales and start communicating with a certain individual named Ring. The author assigns whales a human-like character, with anecdotes and stories that shape their personalities. Ring is the main whale character who has been sending calls, songs, to his blue pals ahead of the fragment, to warn them about

its perils. Ring's main concern here is letting other blues know that the fragment cannot be confused with a simple iceberg, so whales should avoid diving under it or else they will drown. Both Ring and the novel's scientists will collaborate, trying to stop the potentially devastating effects of the fragment's drift, not without encountering opposition from high political spheres.

Although global warming and climate change have been well-evidenced by science on the basis of fact, it goes without saying that there are some sectors in American society that are in the practice of constantly denying scientific facts. In *Fragment*, the characters that embody science, and specifically climate denial are none other than the president of the United States and his cabinet. The U.S. president depicted in the novel was partially based on the former Canadian Prime Minister, Stephen Harper, a conservative known to be a climate change skeptic (Cameron, 2019). *Fragment* was published in 2016, right before the election of the current U.S. administration, and anticipated years of climate change denial policy to come, from the administration's doubt about the National Climate Assessment in 2018 to withdrawing the U.S. from the Paris Agreement on Climate Change.

All in all, *Fragment's* premise and execution are populated with scientific information that drives the reader to jump from the pages to the web, feeding a growing appetite for wonder that helps in sustaining the suspension of disbelief. Russell's eco-thriller succeeds in engaging the reader with its fast-pace at the same time that it explores current topics such as post-truth politics, and more unconventional areas such as interspecies communication.

**Press Release/Announcement for Escape Velocity Extra (EV), 8/26****Tim Russ (Star Trek: Voyager) and Peter Macon (The Orville) to  
Headline Escape Velocity Extra Online Program on  
Race and Resistance in Science and Speculative Fictions  
Wednesday night, August 26, 7:00 p.m. ET**

*Two-Hour Feature to Explore Academia and Pop-Culture Sci-Fi  
Focus on Race and Resistance*

Washington, DC (August 12, 2020) – With actors Tim Russ from *Star Trek: Voyager* and Peter Macon from *The Orville* leading the celebrity panel, *Escape Velocity Extra (EVX)* will deliver its most provocative program to date in late August as it takes a comprehensive look at race and resistance in science fiction.

In the wake of George Floyd's brutal murder, and a larger and longer-standing tradition of extrajudicial killings of Black Americans, universities, businesses, and boardrooms around the country—and around the world—have started engaging with (or intensifying their engagement with) the topics of race, prejudice, personal and systemic racism, and police brutality. The emergence of COVID and its disproportionate effect on communities of color has further underscored the inequalities and injustices that still run rampant (with troubling frequency) in American society. In this moment of social distancing, multi-modal protest, and popular culture discourse, the Museum of Science Fiction will participate in the discussion with a thought-provoking panel on the many facets of race contained in and explored through works of science and speculative fiction.

Entitled, **Policing Blackness: Incarceration, Resistance, and Respectability Politics**, the Museum of Science Fiction's online program will deliver a dynamic two-hour program that's most certainly right for the times. The program will air exclusively online, **Wednesday evening, August 26, starting at 7:00 p.m. Eastern Time.**

Hosted by the Museum's own Aisha Matthews, EVX will deliver a multi-part discussion with industry scholars, pop culture specialists, and special celebrity guests. Session #1 will feature academicians and authors Isiah Lavendar III, andré carrington, Lisa Yaszek, and De Witt Kilgore in a panel discussion about policing, respectability politics, and liberation in science and speculative fiction literature, film, and popular culture. In Session #2, Peter Macon, who plays Bortus on *The Orville*, and Tim Russ, Tuvok from *Star Trek: Voyager*, will take an in-depth look into interstellar race relations, the on-screen and off-screen dynamics of race in Hollywood, and the challenges and benefits of working in science fiction for Black actors.

From the works of such popular Afrofuturist authors as Octavia Butler, Nalo Hopkinson, N.K. Jemisin, and Tananarive Due to the broader works of speculative fiction contributed by authors such as Margaret Atwood and Philip K. Dick, race—or its absence—still plays a crucial role in the fabric of world-building, and more importantly, in humanist understandings of what the future can and



**Press Release/Announcement for Escape Velocity Extra (EV), 8/26**

should look like. From movies like District 9 to shows like the Orville, Stargate SG-1, and Luke Cage, race is both overtly and subtly intertwined with science fiction narratives of incarceration, resistance, and identity.

Race is a boundary in constant need of redefinition, changeable as it is with the tenor of the times. The policing of that boundary—in all senses of the word—is one of science fiction’s most complex concerns. Therefore, if any genre holds the potential for new imaginings of race, criminal justice, and the future of humanity itself, it is science fiction. Join us to explore some of its most salient possibilities—and abject failures—as we look at world that we hope to leave better than we found it.

Session #1 is open to the public and free of charge. Session #2 requires a \$5 tax deductible donation to the Museum. Both Russ and Macon will be available for paid one-on-one fan engagements following the program. For additional information, or to register, please visit <https://escapevelocity.events/evx/>.

**About the Museum of Science Fiction**

The nonprofit Museum of Science Fiction will be the world’s first comprehensive science fiction museum, covering the history of the genre across the arts and providing a narrative on its relationship to the real world. The Museum will show how science fiction continually inspires individuals, influences cultures, and impacts societies. Also serving as an educational catalyst to expand interest in the science, technology, engineering, art, and math (STEAM) areas, the Museum uses tools such as mobile applications and wifi-enabled display objects to engage and entertain. For additional information, please visit: [www.museumofsciencefiction.org](http://www.museumofsciencefiction.org).

## About the Contributors

### Artists

**Julia Slocumb Dluzen** is a neuroscientist and freelance editor. She enjoys reading her husband's manuscripts, reading anything else she can get her hands on, cooking, hiking, star gazing, and building pillow forts with her two-year-old son. She releases creative energy through baking, sewing, drawing, and photography.

**Rosana Asar [Cover Artist]** is an artist specializing in the medium of oil painting. She immigrated to the United States from Argentina in the early 1990's and since that time, her work has become an ever increasing search for this true essence. She is an explorer of dreams, using color and texture to unveil the hidden images in nature and culture. Her paintings are an expression of her passion for life. [www.rosanaazar.com](http://www.rosanaazar.com).

### Authors

**Brett Butler** is an Assistant Professor of English at Loyola University Maryland. His areas of specialization include business & technical writing, environmental science fiction, gender studies, comic books & graphic novels, and popular culture. He teaches courses on technical editing, rhetoric and discourse in business, confessionalism, American Literature (1950s-1960s), American detective fiction (1920-1960), and video game narrative(s).

**Bridgitte Barclay** is an Associate Professor and Chair of English at Aurora University. Bridgitte researches and teaches about intersections of gender, science fiction, and the environment. She serves on the Executive Council for the Association for the Study of Literature and Environment (ASLE) and co-leads the Ecomedia SIG for that organization. Her recent work includes the book *Gender and Environment in Science Fiction* (2019) with Christy Tidwell, a chapter on Louise Erdrich's novel *Future Home of the Living God* in *Fiction and the Sixth Mass Extinction*, a chapter on creature features for a forthcoming

collection on eco-horror, work on early twentieth-century eco-media by women, and an article on gender and environment in museum habitat dioramas for *The Atlantic Online* Object Lessons series.

**Christy Tidwell** is an Associate Professor of English & Humanities at the South Dakota School of Mines & Technology. She works primarily at the intersection of environmental humanities, speculative fiction, and gender studies. She is Digital Strategies Coordinator for the Association for the Study of Literature and Environment (ASLE), co-leader of the ASLE's Ecomedia interest group, and co-editor of both *Gender and Environment in Science Fiction* with Bridgitte Barclay (Lexington Books, 2018) and *Fear and Nature: Ecohorror Studies in the Anthropocene* with Carter Soles (Penn State University Press, forthcoming).

**Gerry Canavan** is an Associate Professor of twentieth- and twenty-first-century literature in the Department of English at Marquette University, and the author of *Octavia E. Butler* (University of Illinois Press, 2016). His research focuses on the relationship between science fiction and the political and cultural history of the post-war period, with special emphasis on ecology and the environment. Additional current research projects include a critical monograph on science fiction and totality and a theoretical-historical study of the relationship between science fiction and the animal rights movement. He also serves as an editor at *Extrapolation* and *Science Fiction Film and Television*.

**Jim Coby** earned his Ph.D. in English from the University of Louisiana at Lafayette and is an Assistant Professor of English at Indiana University Kokomo. His research interests include literature of the American South, environmental writing and criticism, and comics and graphic novels. His essays and reviews have appeared in several journals and collections of essays.

**Jonathan Hay** is a Ph.D. candidate and visiting lecturer at the University of Chester, UK. Their doctoral thesis investigates the intersections between Science Fiction and Critical Posthumanism. Jonathan has recent publications in *Journal of Posthuman Studies*, *Kronoscope*, and the British Science Fiction Association's critical journal, *Vector*. They are co-editor of a major volume of essays titled *Talking Bodies Vol. II—Bodily Languages, Selfhood and Transgression* (Palgrave, 2020).

**Melody Jue** is Associate Professor of English at the University of California, Santa Barbara, and works across the fields of ocean humanities, science fiction, STS, and media theory. Drawing on the experience of becoming a scuba diver, her book *Wild Blue Media: Thinking Through Seawater* (Duke University Press, 2020) develops a theory of mediation specific to the ocean environment. She is the co-editor with Rafico Ruiz of *Saturation: An Elemental Politics* (Duke Press, 2021) and co-editor with Zach Blas and Jennifer Rhee of *Informatics of Domination* (Duke Press, under contract), and has published articles in journals including *Grey Room*, *Configurations*, *Women's Studies Quarterly*, *Resilience*, and *Animations: An Interdisciplinary Journal*.

**Meryl Stenhouse** has had many careers and regrets none of them. She has a science background and a tendency to over-analyse disaster movies. She lives in Queensland because the weather is great and there really aren't that many deadly spiders. Don't listen to the media. Very few people get chewed up by crocodiles here.

**Octavia Code** is a New Zealand writer with a Ph.D. in science communication. Her stories have appeared in *Clarkesworld*, *Asimov's*, *Shimmer*, and a number of other places. Previous academic papers have spanned everything from poetry to possession, and have appeared in places such as *Horror Studies*, *ISLE: Interdisciplinary Studies in Literature and Environment*, and *Ecological Entanglements in the Anthropocene*. She was the 2020 writer-in-residence at Massey University.

**Pearson Bolt** is a Visiting Instructor of English at the

University of Central Florida where he teaches writing and rhetoric.

**Stephanie Lance** is a Visiting Professor of English at the University of South Florida. Her current research explores slaughterhouse imagery in twentieth and twenty-first century texts. Dr. Lance primarily focuses on the shared bodily oppression that exists between humans and other animals. Her research interests also include gender, environmental ethics, and critical animal studies.

**Veronkia Kratz** is a Ph.D. Candidate in English Literature at Carleton University in Ottawa. Her dissertation project investigates U.S. cultural narratives of desert transformation from the 1930s Dust Bowl to the contemporary moment. Her research focuses on the ways that environmental crisis is understood and utilized via pervasive cultural narratives—in the case of aridity, to necessitate political, ecological and industrial transformations in dry land systems. Her work on American environmentalist writer Rachel Carson has recently appeared in the edited collection *Silver Linings: Clouds in Art and Science* (2020).

### Book Reviewers

**Elizabeth Diago-Navarro** holds a Ph.D. in Biochemistry and Molecular Biology from the Complutense University of Madrid (Spain) and a Master of Public Health from the SUNY at Albany (U.S.). She specializes in infectious diseases and microbiology, and is a member of the women-scientists leadership program, *Homeward Bound*, working to address climate change and its effects.

**Sarah Powell Price** originally hails from Gettysburg, PA. She has a M.Sc. in Microbiology & Immunology and an M.S. in Research Methods from James Cook University in Townsville, Australia. She completed her undergraduate degree at Hamilton College in upstate NY. A bench scientist at heart, she is currently working as an internal consultant in Regulatory and Medical Affairs.

**Zaida Ortega** is an ecologist who specializes in the effect of environmental temperature on animal behaviour. She earned her Ph.D. at the University of Salamanca (Spain), currently works as a postdoctoral fellow at the Federal University of Mato Grosso do Sul (Brazil), and is a member of Homeward Bound, an international network of women leaders joined to preserve nature. She loves reading science fiction and scientific essays to learn from them for improving her science, teaching, and actions to preserve nature and mitigate climate change.

### Editors

**Aisha Matthews** (Managing Editor) holds a B.A. in English from Yale University, an M.A. in English from Southern New Hampshire University, and has completed some Ph.D. study in English at Southern Methodist University. Her research interests include Afrofuturism, disability studies, young adult science fiction, womanism, biopolitics, and postmodern theory. Her first book chapter, "Conspiracies of the Flesh: Disciplinary Power and Female Embodiment in Margaret Atwood's *The Handmaid's Tale*" was recently published in the anthology *Critical Insights: Conspiracies* (Salem Press, 2020), edited by Jim Plath. She is also a freelance editor, and serves as the Director of Literature Programming for the Museum of Science Fiction's Annual Escape Velocity Conference.

**Anthony Dwayne Boynton** (Editor) is a Southern scholar-blerd based in Lawrence, KS and a doctoral student in English. This Georgia native earned his B.A. in English at Fort Valley State University and his M.A. in English at Georgia College & State University. He is a writer and scholar of black speculative fiction and researches sci-fi's connections to black cultural politics.

**Barbara Jasny** (Editor) holds a Ph.D. from Rockefeller University and her career has been science-first, performing research in molecular biology and virology and then becoming a research Editor and Deputy Editor for *Science* magazine. She has com-

municated science through books, articles, posters, art displays, virtual presentations, meetings, digital media, and podcasts.

**Benet Pera** (Editor) holds a Ph.D. in Biological Sciences from Complutense University of Madrid, Spain. As a postdoctoral researcher, he performed preclinical studies at Memorial Sloan-Kettering Cancer Center, and investigated new therapeutic strategies to treat cancer at Weill Cornell Medicine. He is currently applying both his science background and analytical skills in the investment industry, working in equity research covering the biotech sector in an investment bank.

**Doug Diuzen** (Editor) holds a Ph.D. in Biology and is an Assistant Professor of Biology at Morgan State University in Baltimore, MD. He is a geneticist and has studied the genetic contributors to aging, cancer, hypertension, and other age-related diseases. Currently, he studies the biology of health disparities and the microbiome in Baltimore City. He teaches evolution, genetics, and scientific thinking and you can find more about him on Twitter @ripplesin-time24. He loves to write about science and enjoys exploring scientific ethical and societal issues in his own speculative fiction writing.

**Melanie Marotta** (Editor) holds a Ph.D. in English from Morgan State University, where she is currently a Lecturer in the Department of English and Language Arts. She is originally from the province of Ontario in Canada, and her research focuses on science fiction, the American West, contemporary American Literature, and Ecocriticism.