

**Climates of Mutation: Posthuman Orientations in Twenty-First Century
Ecological Science Fiction**

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Abstract

Climates of Mutation contributes to the growing body of works focused on climate fiction by exploring the entangled aspects of biopolitics, posthumanism, and eco-assemblage in twenty-first-century science fiction. By tracing out each of those themes, I examine how my contemporary focal texts present a posthuman politics that offers to orient the reader away from a position of anthropocentric privilege and nature-culture divisions towards an ecologically situated understanding of the environment as an assemblage. The thematic chapters of my thesis perform an analysis of Peter Watts's *Rifters Trilogy*, Larissa Lai's *Salt Fish Girl*, Paolo Bacigalupi's *The Windup Girl*, and Margaret Atwood's *MaddAddam Trilogy*. Doing so, it investigates how the assemblage relations between people, genetic technologies, and the environment are intersecting in these posthuman works and what new ways of being in the world they challenge readers to imagine. This approach also seeks to highlight how these works reflect a genre response to the increasing anxieties around biogenetics and climate change through a critical posthuman approach that alienates readers from traditional anthropocentric narrative meanings, thus creating a space for an embedded form of ecological and technoscientific awareness.

My project makes a case for the benefits of approaching climate fiction through a posthuman perspective to facilitate an environmentally situated understanding. By mapping the aspects of bare life, posthuman becomings, multispecies community, and environmental agency that situate these texts within their climate-focused twenty-first-century contexts, my dissertation models its own series of entanglements. It also reveals areas of concern that include infectious agencies, subversions of biopolitical containment, and the co-constitutive transformative powers of the environment and nonhuman life. *Climates of Mutation* addresses the ways that these

contemporary science fiction narratives have responded to cultural and scientific developments to invite critical engagement from readers—especially in terms of embracing concepts of environmental assemblage and imagining potential multispecies futures. By taking an assemblage approach to these works of posthuman ecological science fiction, my project draws attention to how they critically subvert anthropocentrism by privileging nonhuman and environmental agencies in which humans are an entangled part of biopolitical forces, multispecies collectives, and ecological assemblages.

Dedication:

This dissertation is dedicated to my partner Dana Kokurewicz who has stood by me through this long journey and has been an unending source of strength, love, and compassion.

And to my grandfather, John P. Cannon, whose life never afforded him the opportunity for higher education but who always encouraged my academic aspirations.

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1. Introduction: The Climate of Posthuman Anthropocene Fiction

While earlier decades have had eco-fiction movements, climate anxiety and increasingly damning reports from the International Panel on Climate Change have produced a great interest in climate and ecofiction since the start of the twenty-first century. Despite its relatively recent coining, the term “Anthropocene”¹ has generated a mix of support and controversy in environmental and theoretical circles (Biermann and Lövebrand 1) and has generated a strong level of engagement from the growing field of the environmental humanities. Antonia Mehnert’s research on ecofiction contends that “The cultural realm offers a rethinking and reimagining of contemporary environmental problems such as climate change that not only intervenes in current debates but also fundamentally shapes them” (2). Yet, while there has been recent interest in climate change fiction/ecofiction² and a growing body of ecocriticism, particularly in response to the rise of the “cli-fi” novel³, “That climate change casts a much smaller shadow within the landscape of literary fiction than it does even in the public arena is not hard to establish” (Ghosh 7). All too often exiled from categories of “literary fiction,” science fiction has become one such fruitful place for creating spaces for rethinking and reimagining to happen, especially in how environmental problems intersect with major scientific biotechnological advances and human interactions with other species and phenomena. It is notable that at the same time that the Anthropocene is being widely proclaimed as a geological era defined by human activities, critical posthumanism has also come into its own examining questions outside the human and

¹ First coined by Paul J. Crutzen and Eugene Stoermer in 2000. The Anthropocene has increasingly been popularized in the theoretical and scientific communities to describe the period of human activity that has drastically altered the earth’s ecology and geology. The start dates of this period often begin around the 1800’s but some theorists position it thousands of years earlier (Clark 1-2).

² For a detailed account of the development of Climate focused fiction, see Adam Trexler’s *Anthropocene Fictions*.

³ Amitav Ghosh identifies “cli-fi” as a new genre of science fiction but dismisses it as being comprised mainly of “Disaster stories set in the future” (72)

exploring the growing interconnections being revealed and potentially exchanged through advances in environmental studies, genetics, and biotechnologies which suggest that the human is in fact “an instantiation of a network of connections, exchanges, linkages and crossings with all forms of life” (Nayar 5). Rosi Braidotti situates human and nonhuman inhabitants as being “currently positioned between the Fourth Industrial Revolution and the Sixth Extinction” (*Posthuman Knowledge* 2). For Braidotti, being caught between these two events requires intellectual and affective mediation and an affirmative ethics (3); thus, it requires creative approaches and considerations of ways that we might critically examine means of knowledge production and being in the Anthropocene.

My dissertation traces what I would argue is a turn in twenty-first-century posthuman science fiction that aims to put the posthuman into dialogue directly with the environment. My decision to limit my project to examining works at or after the millennium is based on the major ecological and scientific shifts that occurred in the late 1990s and spanned into the millennium. Adam Trexler observes in his survey of climate change narratives that there are several works expressing concern regarding human alteration to climate going back to the 1950s and 60s before concerns over the greenhouse effect were being sounded but it is in the first decade of the twenty-first century where “climate fiction steadily expanded” (*Anthropocene Fictions* 7). I suggest that the adoption of the Kyoto Protocol in 1997 and its ongoing ratification into 2005 led to a major shift in the international discussion about global warming, drawing it to more widespread public attention and cultural consideration. Additionally, on February 22, 1997, Scottish scientists publicly announced the existence of Dolly the sheep, the first cloned mammal. While science fiction texts discussing cloning and genetics existed decades earlier, the real potential of genetic manipulation and the completion of the Human Genome Project in 2003

sparked public and academic discourse regarding the ethics, possibilities, and potential dangers of the accelerating advances in biotechnologies. In terms of science fiction, biotechnologies such as cloning and genetics as well as the chaotic and devastating effects of climate change appeared to have a growing influence on the genre⁴ as a result of these events; the genre responded by engaging with possibilities and questions of cloning, hybridity, genetic modification, and the effects of genetically modified organisms on the environment and in response to climate change.

My thesis is situated amidst these ongoing scientific, cultural, ecological, and literary developments, exploring how certain contemporary science fiction texts are responding to them and the growing anxieties regarding technoscience and climate change by engaging with a posthuman environmental politics. My project examines the work of four authors spanning from the turn of the millennium to the early 2010s and argues that through their posthuman framework, they demonstrate a genre response to the Anthropocene that generates a space for an ontological resituation to occur by destabilizing and alienating readers from traditional narrative biases that favour anthropocentric perspectives. Their works further achieve this by reorienting readers towards contemplating and navigating the complex and intersecting discursive and biopolitical matters of climate change and biotechnologies in ways that resist the traditional binary divisions of human/animal, nature/culture, as well as the Enlightenment humanist anthropocentric fixation that has driven prior science fiction narratives centring on ‘man’s’ relationship to technology. My project focuses on Peter Watts’s *Rifters Trilogy*⁵ containing *Starfish* (1999), *Maelstrom* (2001), and *Behemoth* (published in two volumes as *β-Max* and

⁴ For a detailed survey of “climate fiction,” in particular contemporary texts located in the genres of science fiction and fantasy, see the introductory chapter to Mark Dipaolo’s *Fire and Snow: Climate Change Fiction from the Inklings to Game of Thrones*.

⁵ *Behemoth: β-Max* and *Behemoth: Seppuku* were intended to be two parts of a single novel but had to be published in two separate volumes. They will be cited separately for bibliographic clarity but textually referred to as part of a trilogy to remain true to the author’s intentions. See Watts’s “Author’s Note” in *B-Max*.

Seppuku (2004), Larissa Lai's *Salt Fish Girl* (2002), Paolo Bacigalupi's *The Windup Girl* (2009), and Margaret Atwood's *The MaddAddam Trilogy* containing *Oryx and Crake* (2005), *Year of the Flood* (2009), and *MaddAddam* (2013). These works engage with many relevant technological advances such as cloning and genetic modification, as well as environmental concerns such as climate change. Additionally, they offer important critical perspectives and creative extrapolations regarding technology and global capitalism and the ways they affect the bodies of women, people of colour, and queer identities that have often been overlooked in popular media. These differently embodied subjects in the texts tend to not only be more aware of their position within a wider environmental network, but their relationship to technology is also much more complicated, often having been bodies that have been modified, produced, or manipulated by it without their full consent. Beyond the interrelations between bodies and technologies, these texts also pay great attention to nonhuman beings, posthuman partnerships, and forms of multispecies community that offer opportunities to resituate oneself in an enmeshed environment through greater attention to the complex and often contradictory or messy intersections of bodies, species, and ecologies.

When one thinks about the role of the posthuman in science fiction, the likely questions that come to mind are often related to cyborgs,⁶ technologies, and what it means to be human, especially with the possibilities of cyber-technologies to alter our physical, social, and mental selves. A popular example is the cyberpunk movement which currently seems to be undergoing a revival with recent television shows and films including *Blade Runner 2049* (2017) and Laeta Kalogridis's Netflix series *Altered Carbon* (2018)⁷. All too often, however, the cyborgs in fiction

⁶ I mean cyborg here as it is often portrayed in popular culture as a human-machine hybrid, not in the more nuanced theoretical meaning established by Donna Haraway and other cyborg theory scholars.

⁷ Adapted from Richard K. Morgan's 2002 novel by the same title.

reinforce anthropocentric narratives that offer little criticism into the greater environmental implications of such technologies. Bruce Sterling's *Schismatrix* (1985) features Shapers and Mechanists, one altering their genetics to adapt their bodies, while the other seeks immortality through technology. William Gibson's *Sprawl Trilogy* (1984, 1986, 1989) considers ideas of technological augmentation and virtual transcendence in a future where the material world has fallen into a wasteland of junk and urban decay. Charles Stross's *Accelerando* (2006) details the eventual deconstruction of all the planets in Earth's solar system to accommodate a Matrioshka network—in essence a massive supercomputer where all people and animals live on preserved as digital life able to manufacture physical bodies for them to inhabit. Gibson and Philip K. Dick's *Do Androids Dream of Electric Sheep* (1968) do depict environmental decay; however, the focus on these texts is primarily on the digital and cybernetic interrelations and questions of what it means to be human. While valid areas of investigation, they make it extremely easy to overlook what is happening to those others outside of the human. Mary Shelley's *Frankenstein* (1818) is evidence that we have been thinking about the biological posthuman for a long time; however, the advent of modern gene-editing technologies like CRISPR, as well as advancements in cloning, have generated an increased fixation on the possibilities and risks of modifying the environment, nonhuman animals, and ourselves through biological means—especially as the viability of sustained life is being drawn into question by the threat of climate change.

Jane Bennett remarks in her theorization of a politics of vital materialism that “It is difficult...for a public convened by environmentalism to include animals, vegetables, or minerals as bona fide members, for nonhumans are already named as a passive environment” (111). While dark, tragic, and often unsettling environmental concerns may cast shadows in the background of texts like Gibson's and Stross's work, they all too often function more to create a mood for the

main action of the narrative centred on humans and machines. Instead of concentrating on the struggles between humans and technoscience in a fight to retain mastery over nature and machine, I have chosen to focus my dissertation on ecologically situated texts that model a posthuman assemblage⁸. While these works do not ignore cybernetic technologies or their possible effects, their authors are more focused on the impacts and intersections of biotechnologies, the environment, and the treatment of non-human life forms. Climate change and pollution are positioned in their narratives as ever-present forces that impact the daily realities of characters and events. Thus, rather than reasserting human agency, these texts offer examples of alternative agencies, restoring the human into an environmental mesh/matrix which not only imagines how everything is connected but so that “each point of the mesh is both the center and edge of a system of points, so there is no absolute center or edge” (Morton, *Ecological Thought* 29).

My project also seeks to make a case for approaching literature through a symptomatic approach as a valid and effective method for uncovering the embedded connections and themes that exist within multiple texts in a specific cultural and temporal moment. I feel this is particularly important for approaching works of ecological science fiction and their engagement with posthuman and assemblage politics as these theoretical groups of thought advocate for embedded, multiple, and situated forms of knowledge and connection. In doing so, this thesis explores the dialogical encounters of the posthuman and technology and their relationships with the environment in twenty-first-century science fiction, investigating how the genre has engaged with recent advances in cloning, cybernetics, and genetic modification, as well as the growing

⁸ Assemblage, as Deleuze and Guattari posit it, reconceptualises relations and concepts of identity by resisting the idea of unified wholes. Instead, an assemblage is any number of “things” gathered in a single context and maintains a fluid hybrid relationship that is constantly being “deterritorialized and reterritorialized” (stabilized and destabilized) as new relations and components enter and leave it (3).

pressures such technologies place on the ecosystem. My project asks: how do these fluid relationships among people, technology, and the ecosystem critique and reimagine a posthuman ethics? It also asks, what new possible ways of being and interacting in the world and with other species do these texts challenge readers to imagine? I explore these questions by tracing the estrangement and resistance to positions of anthropocentric privileging and biopolitics that govern bodies, definitions of life, and technologies. Doing so, I examine how these texts privilege the nonhuman and environmental agencies in which humans are an entangled part of multispecies collectives and environments—in other words, an “environmentally bound subject” that is “a collective entity, moving beyond the parameters of classical humanism and anthropocentrism” (Braidotti, *Transpositions* 41). Essentially, I am arguing that these texts employ a critical posthumanist politics to break down traditional ontological divisions that separate humans from machines, animals, and the environment, and instead reintegrate them into a network of fluid and hybrid relationships that can accommodate tensions and contradictions, as well as areas of interdependency. By tracing this shift towards an environmentally immersive framework, my dissertation offers an analysis of the interrelations that these texts model, positioning it as a possible means of reconceptualizing our ethical paradigms. It also offers a combined exploration of these texts and the ways that ecocriticism, material assemblage/enmeshment, and critical posthumanism are coming together for shared outcomes in twenty-first-century science fiction—a movement that symbolizes how navigating the Anthropocene and the challenges it poses for the ecological future and species justice also requires a multidisciplinary approach complete with strange partnerships and hybrid discourses.

1.1 Hybrid Methodologies: Approaches to a Posthuman Eco-Politics

The body of my dissertation itself models a hybridity of discourses, allowing for an examination of my focal texts from multiple theoretical lenses and different discursive areas of concern regarding biotechnologies, posthuman representations, and the environment. As mentioned, I am approaching these works symptomatically, reading within the texts and the shared themes that span them for what questions they pose to readers and what kind of space they create for orienting readers towards a more ecologically situated and less anthropocentric mode of thinking. While I approach the texts through the technological, biopolitical, infectious, and agential themes and preoccupations that run throughout them, drawing out their multiple interconnections, I do so by engaging not only with posthuman and cyborg theory but also biopolitical and embodiment feminist discourses, ecocriticism, and assemblage theory. In doing so, I hope that my dissertation will invite new possibilities and questions, accommodating not only its attempted intervention but also the tensions that may emerge within texts that model through their ecological concerns neither a complete embracing nor rejection of biotechnology, especially in terms of its impact on racialized and gendered bodies, and animal others. I also feel this type of method is important, if not necessary, for approaching texts ecologically since:

Climate change changes the literary potentialities of setting, conflict, the organization of characters, and the fundamental way that diverse characters and nonhumans interact in narratives. These developments will demand new readers to trace the more complicated networks among science, things, and societies (Trexler, *Anthropocene Fictions* 233).

Thus, to establish how anthropocentrism, nature/culture divisions, and attitudes towards biotechnologies are entangled with our current environmental and sociopolitical situation and how these texts seek to intervene, it is necessary to connect them using multiple discursive

approaches. While not all my texts feature climate as the explicit driving actor of plot and action in them, it is always present and subtly destabilizing and affecting other aspects of the assemblage of ‘environment’ inhabited by the characters and in contributes to the ecological pressures felt in each narrative, even if the primary narrative focus appears to be a plague, rebellion, or survival⁹. Biotechnologies like cloning and genetics intersect with climate change in my focal texts to become some of the primary nonhuman actors in their narratives. As active forces, both biotechnologies and climate change generate situations of instability or drastic technological intervention that allow for a nuanced reading of these works that also helps remove them from the traditional categorizations in specific subgenres of science fiction such as ‘disaster,’ ‘plague,’ ‘apocalyptic,’ or ‘speculative.’

An examination of material/environmental and nonhuman agencies, their agential interactions, and their realities in the contexts of my chosen authors’ preoccupations with clones, cyborgs, hybrids, and artificial agents requires an account of the biopolitics at work in the texts. Such an account becomes particularly important for looking at how technologies and human-nonhuman interactions can become either extremely destructive or potentially restorative for how life is classified in terms of its inherent value in addition to its status as either being natural or artificial—even invasive. The institutions and industries that govern life and reproduction have increasingly become bioeconomies shaped by biotech companies and their efforts to obtain surplus value/ “biovalue” from life (Rose 15). The effects of climate change result in a vast and unexpected reorganization of our methods for understanding (Trexler, “Integrating Agency” 228). During the past century and a half, biopolitics has been shaped by “risk thinking” (Rose 7). Rosi Braidotti contends that biopower affects not only “the subjects who are allowed to survive”

⁹ Survival in many of my central works does not necessarily mean *human* survival.

but also “those who are doomed to perish” (“Transposing Life” 62). Observing the corporate influence in the areas of bioinformatics and biotech, Eugene Thacker aptly summarizes that the broader ethical questions are now moving towards “how ‘value’ is defined, and what the relation of value is to the body of the subject” (180). Whether because of disease, disaster, or the instabilities of climate change causing species collapse, this question of value is presented in several forms in my texts not only in the value of human and posthuman lives but also the value of nonhuman species and environmental systems.

Bodies, life, community, and environment are all transformed by hyperobjects¹⁰ like pollution and climate change—as well as the many events that they set in motion such as infection, multispecies collapse, political tensions, lack of resources, fertility, refugee/migration movements, and economic and government instability. Tracing the biopolitical understandings of these categories as they are transformed becomes important to identify the ways that my texts acknowledge and predict the inequalities that result from corporate technoscience and an anthropocentric ‘use value’ approach to the environment. By engaging with these biopolitical factors, my focal texts complicate and resist a vision of salvation emerging from potential technological innovation and biotechnological transformation; science and technology no longer provide successful domination over nature¹¹ or immunity to the growing disasters associated with an increasingly unpredictable ‘Nature.’ My approach also allows for a critical look at how technologies and biotechnological industries influence not only our definition of life, but also which forms of life have value in our increasingly managed, stressed, and less biodiverse

¹⁰ Morton coins the term hyperobjects to describe “things that are massively distributed in time and space relative to humans” (*Hyperobjects* 1). Morton discusses global warming in the context of it being a hyperobject, noting that it “cannot be directly seen, but it can be thought and computed” (3).

¹¹ Arguably technoscience has never successfully mastered nature, but culturally it has certainly been portrayed as an eventual means of transcendence or a successful means of shaping our ‘biological destinies’ and environments.

ecosystems. Understanding life and bodies within this complicated assemblage of forces and how hegemonic forms of discourse around biotechnologies shape our concepts of life and nature-culture binaries are further enhanced by engaging with the posthuman which has extended the very human subject-centred biopolitics of Foucault through theorists like Rosi Braidotti and Cary Wolfe to consider nonhuman animals and technological subjects and bodies.

The term “posthuman” often has mixed associations. Throughout the late twentieth-century, multiple theories of the posthuman have emerged but many reassert or continue several liberal humanist concepts¹² where “the concept of the subject as owning himself and owing nothing to society for this self or its capacities is evidence of a profound individualism that marks many version[s] of the posthuman” (Vint, *Bodies of Tomorrow* 13). This form of anthropocentric subjectivity emphasizes the separation of the privileged rational (human) self, resulting in nature and animals being positioned as passive and disconnected recipients upon which that subject might enact its will. I agree with Pramod Nayar’s claim that the traditional definition of the human is that of a conscious and intelligent/rational subject able to act on his/her own will/desires (Nayar 5). As Nayar points out though, this human subject has “traditionally been treated as male and universal. It is always treated in the singular (*the* human) and as a set of features or conditions: rationality, authority, autonomy and agency” (5). In addition, the liberal humanist subject is deeply troubled in its reliance on the binary opposite of the Other to define that subjective “self”. While subjectivity is “equated with consciousness, universal rationality, and self-regulating ethical behavior . . . Otherness is defined as its negative and specular counterpart” (Braidotti, *Posthuman* 15). Accounting for normative understandings

¹² Humanism has its basis in European Enlightenment philosophy and is strongly linked historically with Western imperialism (Braidotti, *Posthuman* 15). Kate Soper identifies both liberalism and humanism as being founded upon principles of dominating the natural world (14-15). This quality of domination continues within the transhumanist realm where the environment is often positioned as something for humanity to shape, alter, or destroy as it sees fit.

of subjectivity and otherness facilitate greater awareness of how humanism has excluded certain groups and individuals that have been defined as other, especially in its emphasis on rationality and individual freedom.

Rather than turning to forms of the posthuman that have often surfaced in science fiction film and television such as *Star Trek*'s Borg or the Mechanists in *Schismatrix* that tend to pit man against machine or represent technology as a means to “transcend the flesh” and master nature¹³, I instead focus my dissertation around the form of posthumanism defined by Sherryl Vint and N. Katherine Hayles as a critical posthumanism that emphasizes the importance of lived realities and inter-species connections and dependencies. According to Pramod Nayar, critical posthumanism “is the *radical decentering of the traditional sovereign, coherent and autonomous human in order to demonstrate how the human is always already evolving with, constituted by and constitutive of multiple forms of life and machines*” (2). Nayar further defines critical posthumanism as a discursive approach that “addresses the question of the human in the age of technological modification, hybridized life forms, new discoveries of sociality (and ‘humanity’) of animals and a new understanding of ‘life’ itself” (3). To that extent, critical posthumanism becomes a means of not only rethinking animal and nonhuman life but also potentials enabled by technologies in ways that are not limited to the human subject.

Beyond this decentring and co-constituting of the human, critical posthumanism allows for a posthuman subject that is open to partnerships between human and animals and that is “embodied and embedded” and given a relationality to the world which “extends through the multiple ecologies that constitute us (Braidotti, *Posthuman Knowledge* 47). This form of

¹³ This is common but not true of all science fiction narratives from the 20th Century. Both Octavia Butler’s *Xenogenesis* series and Philip K. Dick’s *Do Androids Dream of Electric Sheep* represent examples of authors exploring ideas of care for non-human sentiences that also resist a humanist or transhumanist techno-fantasy.

relationality to the biosphere through embeddedness also enables a reconceptualization of agency that becomes quite important to later chapters of this project. Under humanism, agency takes on a form of (human) intentionality, becoming identified with rational beings enacting their will on others. In contrast, critical posthuman thinkers such as Karen Barad and Stacy Alaimo have made use of a posthuman embedded politics to redefine agency as an ongoing series of reconfigurations of matter and “intra-actions” between phenomena that determine the boundaries and meanings of bodies/matter in an ongoing flow of agency (Barad 140). Like Braidotti, Alaimo’s trans-corporeal politics which positions human bodies as interconnected with each other in addition to the environment (*Exposed* 67) provides a similar radical rethinking of agency. These positions enable a critical resistance to anthropocentric perspectives limited to human will and action and allow agency to be extended to include nonhuman beings and even environments. By extending agency to nonhuman phenomena, my thesis produces more nuanced readings of Watts’s virtual environments and entities, the infections that run through all my texts, as well as animal and hybrid beings like Atwood’s Pigoons and Crakers.

Moreover, the embedded perspective of this critical posthuman approach allows for an understanding of the power that environments, toxins, and climate change have to act on human bodies, even as the Anthropocene shifts focus onto human action as the root cause. Alaimo maintains that reconsiderations of materiality for nonhuman life must address material agency since to disregard it is to “transformation of the world into a passive repository of resources for human use” (Alaimo, *Bodily Natures* 143). Recognizing nonhuman agencies allows my thesis to perform a reading of climate change narratives, their driving forces, as well as the contaminated landscapes and toxic bodies within the texts. It also facilitates an approach to these hyperobjects and assemblages from multiple points of recognition so that both human agency and

responsibility for contributing to these forces are acknowledged along with the agency and powers beyond human control that they also exert on us. The posthuman thus informs my ecological readings of the texts, extending the conceptual understanding of the environment to range beyond just landscape/nature but to also include virtual spaces such as Maelstrom's ecologies in *Rifters* and even bodies as forms of environments that are interconnected with and flowing into others as in Lai's characters and their fluid connections with food, water, and soil.

Combining the posthuman with assemblage theory also creates fruitful discussions through the latter's embracing of "networks" of agencies/actors, including nonhuman ones. Climate change, according to Trexler, might be understood as "the site of emergence for new forms of agency" ("Integrating Agency" 222). Discussing Anthropocene novels that account for multiple agencies and powers of nonhuman phenomena, Trexler observes that in many climate change texts focused on political and social action, humans are expected to be the source of the change, but that in such texts that account for "the nonhumans and distributed populations of the Anthropocene," the political process is simply one node of a complex system (*Anthropocene Fictions* 172). This latter presentation of climate change is something my focal texts achieve. The complexity of climate change is something that Frederick Buell acknowledges, stating it:

has emerged as an impossibly complex, interactive crisis, one that connects material with semiotic change in an almost uncountable number of social and environmental places....Global warming's rapidly growing sets of issues and involved actors and the increasingly impossibly entangled connections between them make a comprehensive inside without an outside, within which society necessarily attempts to continue constructing itself. ("Global Warming as Literary Narrative" 268)

Assemblage theory and the understanding of environment/ecology as what Timothy Morton terms a “mesh” (*The Ecological Thought* 29) helps approach contemporary ecofiction, especially works with a posthuman focus. By lacking a centre or edge, an understanding of mesh/assemblage helps reject the anthropocentric tendency in much science fiction to position ‘Man’ as the creator of technology as a means to shape/control ‘Nature.’ Since the Anthropocene Era emphasizes the human impact on climate and the environment, exploring contemporary science fiction that repositions human agents as parts of an ecological nexus, rather than as the primary centre empowered with the ability to control, dominate, and bring salvation, may be an effective means of comprehending the scale of global human impact. There is a need to recognize the environmental effects of many human activities will span well into the future and that the world is already in a situation where “Climatic instability means that a comprehensible environmental context may be slipping out of reach forever” (Trexler, *Anthropocene Fictions* 215). An assemblage approach also allows for a critical reconsideration of how we think of the environment by taking it outside of traditional binary categories that define nature against the human or technology. This facilitates new conceptions of ecologies that might be necessary for approaching climate change and resisting a nostalgic desire for a return to nature that is both unattainable and an idealized fantasy that never existed in reality.

Utilizing assemblage theory and a posthuman focus on the complex and competing agencies that nonhuman life, environments, economic and biopolitical systems, technologies, and climate are enacting on human beings does not mean ignoring the responsibility and range of actions that humans have. Assemblages do not have an equal dispersal of power (Bennett 23-4). Through examining the works of Watts, Lai, Bacigalupi, and Atwood, one gains a nuanced perspective of the extent of agencies and responsibilities and how acknowledging them may lead

to new forms of community, action, and approaches to being in the world. In examining the enmeshed agencies at work in my focal texts, I show how these works acknowledge power distribution in ways that resist the tradition that Trexler identifies (of humans as those solely the heroes or primary actors at work) and explore how the entangled agencies in their works generate a space for critically reimagining the multiple and sometimes contradictory positions and partnerships that might be enacted across bodies, technologies, species, and ecosystems.

1.2 Why Focus on Science Fiction?

While there is significant critical attention to realist ecofiction, my project has chosen to focus on science fiction as a broad label for these texts and their engagement with scientific discourse and popular culture. The focus on science fiction rather than realist ecofiction is because there is a continued need for scholarship in the field in terms of how the genre is responding to ongoing cultural debates around technoscience, animals, the environment, and climate change, as well as the space it offers to interrogate and challenge many of our cultural and ethical norms. In his discussion of science fiction's engagement with posthumanism, Stephan Herbrechter observes that "Science fiction visualizes the dissolution of ontological foundations like the distinction between organic and inorganic, masculine and feminine, original and copy, natural and artificial, human and nonhuman, etc., and thus serves as a reflection of our science fictional everyday life" which for Herbrechter works to achieve a "'defamiliarization' of an already posthumanized environment" (117). In doing so, it provides a potent space for a critical reorientation to occur concerning our position in relation to the environment and nonhuman animals when it is employed within an eco-posthuman context. By displacing the divisions between human and nonhuman others, one can deconstruct the normative humanist system of values and relationship to the nonhuman world (Herbrechter 119).

Science fiction also creates a generative space for examining the agencies, interrelations, and dependencies existing between humans and nonhuman animals. Vint observes that our concept of the human subject is highly dependent on separating the human from the animal and contends that science fiction is better situated than other literary forms to defy this boundary division since “its generic premises enable us to imagine the animal quite literally looking at and addressing us from a non-anthropocentric perspective” (*Animal Alterity* 5-6). Vint reasons that science fiction offers broader possibilities for integrating animal agency into the world and facilitating a space where animals can be understood “as beings in their own right” instead of being inscribed by anthropocentric systems of meaning. (6). I would argue that the posthuman sub-genre of science fiction, especially with the advent of cloning and genetic technologies such as CRISPR, is uniquely situated for exploring the interspecies interactions, dependencies, tensions, and genes that destabilize the boundaries between humans, animals, nature, and technology.

In addition to its importance for facilitating a posthuman perspective, science fiction offers a specific space of transformation of the idea of the environment as a passive object for humans to enact their will on. Science fiction explores both our relationship with the environment and how our technologies enable us to alter both the ecosystem and the types of environments we can inhabit (Pak 6). This power to alter the environment lies at the heart of the Anthropocene as human actions have now transformed both the environment and climate of the planet in ways that will affect it for centuries if not millennia. Writing on transformative environmental texts, Eric C. Otto suggests “the speculative and affective orientations of environmental nonfiction and science fiction allow both to perform effectively the philosophical work of transformative movements that question institutionalized behavior and try to effect

change in ways beyond mainstream legalistic and bureaucratic procedure” (16-17). Science fiction lends itself strongly to the ecological critique of our future paths and plays an active role in either reinforcing or challenging hegemonic visions of the future. Marge Piercy’s *Woman on the Edge of Time* imagines an eco-feminist utopian future where limited technology is used to maintain ecological stability and human survival doing battle with a dystopian one of pollution and uncontrolled biopolitical modification of human bodies in a heightened form of capitalist exploitation. Gibson’s *Sprawl* trilogy contributed immensely to the cyberpunk subculture in its imagined globalized urban decay which offers an environmental critique in its near absence of nature and the horrors of those flat-lined out of their physical realities via cyberspace. Science fiction permits one to extrapolate into the future while critically examining our present state of affairs. Frederic Jameson argues “the most characteristic SF does not seriously attempt to imagine the ‘real’ future of our social system. Rather, its multiple mock futures serve the quite different function of transforming our own present into the determinate past of something yet to come” (“Progress Versus Utopia” 152). Thus, it distills possible futures and allows us to mediate larger world experiences on a local and global scale, granting it significant potential as a genre to facilitate critical thought towards globally warmed futures and their widespread impact.

It also invites one to hope and contemplate new potentialities and ways of being—something which becomes increasingly challenging when faced with a future as totalizing as global climate change. Comparing ecocriticism and science fiction, Gerry Canavan observes that in a similar way to the estranging techniques of science fiction, ecocriticism functions through its utilization of “deflation and inflation” where “the impulse towards the miserable, deflationary naming of all the various ongoing ecological catastrophes is always matched (if only in negative) by an inflationary, futurological impulse toward the better world that might yet be”

(“Introduction” 16). All the central texts I examine offer visions of rather grim futures—Watts and Atwood in particular—but they are not without spaces of hope and the potential for change and adaptation. Many of them offer such hope through forms of community, empathy, and partnerships with nonhuman entities/species, environments, and technologies. My selected texts resist anthropocentric narratives by resituating their characters within an integrated ecological assemblage where the environments, other lifeforms, and technologies intersect through tense, overlapping bonds. Additionally, they critically engage with the contemporary anxieties surrounding technoscience, establishing through their posthuman fictions an important framework that reorients the reader’s gaze towards the complex network of relations existing between humans and the biosphere by challenging the core definitions of human, animal, and machine. In doing so, they offer a way to reconceptualize our relationship to the biosphere, creating a space to critique the potential consequences of technology beyond a human “profit/control” measure, and to imagine new ways they might be used in tandem with the environment to negotiate new partnerships. These new partnerships and ways of being in a world that will be damaged and coping with losses in biodiversity will require us to take responsibility and stay present with those consequences as we work towards finding a livable—and hopefully diverse multispecies future.

The works of the four authors I am focusing on share intersections with other contemporary texts, interrogating similar environmental and posthuman concerns such as Bruce Sterling’s *The Caryatids*, and Frank Schätzing’s *The Swarm*. My choice to focus on Watts, Lai, Bacigalupi, and Atwood is not only based on their range of dates but also on the shared features that their texts possess, namely a preoccupation with the environment, the complex biopolitical intersections of bodies, environments, and technologies, and a detailed exploration of nonhuman

and environmental agencies as contributing aspects of their narratives. While different in their fictions' directions, narrative styles, and resolutions, their shared features represent an intersecting subgroup of Anthropocene fiction and ecological and posthuman science fiction that has not been explored in great detail. Watt's *Rifters* trilogy delves into cyborg consciousness, artificial intelligence, and environmental adaptation through his genetically and technologically altered rifters and smart gels, offering new ways of conceptualizing consciousness and both potential advantages and disadvantages of posthuman adaptation. Watts also sets his characters amidst a deadly bio-plague that threatens their already unstable and highly polluted environmental reality through its threat to the biosphere. His narrative questions what extremes humans might go to in order to survive and what the cost to the biosphere might be.

Atwood's *MaddAddam Trilogy* also imagines the challenges of adaptation in a post-plague setting, not only through the global effects of genetic modification and ecological exploitation but also through the bioengineered Crakers. Atwood's Crakers and the sentient, human-pig hybrid pigoons resist a human-centred narrative by challenging our treatment of non-human animals in science and consumer culture, troubling the division of human and animal, especially in the pigoons being both a species popular for human consumption and similar enough to humans to make grow tissue for them. Additionally, by constructing her texts to flashback to the pre-apocalyptic setting, Atwood portrays a world already in the process of environmental collapse due to global capitalism and exploitation of the environment.

Larissa Lai's *Salt Fish Girl* and Bacigalupi's *The Windup Girl* both complement the bleak corporate-controlled future of Atwood's trilogy and further break down the human-animal binary by containing genetically modified slaves who are deemed "inhuman" due to their animal genetics. These racialized female cyborg characters interrogate the intersections of technology,

race, and gender under globalization, challenging anthropocentric speciesism through characters that, due to their hybrid genetics, have been excluded from the privileges of humans and are, instead, treated as non-citizens to be exploited or even destroyed. Additionally, Lai and Bacigalupi's texts also critically examine the ethics of genetically patented products through their globally warmed futures full of genetic contamination that affects bodies directly through the foods they consume and the very landscape they inhabit.

1.3 Chapter Overview

My first chapter, "History of the Cyborg" surveys the cyborg's past literary representations and its relationship to science from the rise of automata, Shelley's *Frankenstein*, Darwinian visions of humanistic animals and animalistic humans as in Wells' fictions, the rise of robotics, to more recent cyborgs and artificial intelligence such as those found in the cyberpunk sub-genre inspired by works like Gibson's *Neuromancer*. Beginning with René Descartes and his Enlightenment humanism, this chapter also establishes the very early and heavily ingrained divisions between humans, animals, and machines as a part of Western liberal humanist thought that has not only shaped ontological concepts of 'born' versus 'made' but also biopolitical designations of ownership and an anthropocentric view of all nonhuman agents existing for human use—all problems I return to in later chapters. My initial chapter connects these philosophical and cultural norms to how they have shaped the emergence of the cyborg, robot, and posthuman figures in science fiction as a genre, as well as our political and economic treatment of the biosphere and its denizens. Many of the texts in this chapter do not directly address the environment, though sometimes absence can speak as loudly as presence. They do, however, identify many of the themes and ideas that led to this turn, including globalized capitalism, Western technoscience, genetic modification, and the biotechnological leaps made in

the 1980s and 1990s in cloning and genome mapping. This foundational chapter offers a brief—and far from exhaustive—timeline into the development and conceptual shifts the posthuman draws from in science fiction, especially as it is expressed in the form of cyborgian others and proceeds towards where greater environmental themes and a focus on nonhuman others begin to intersect it as climate change and advances in genetics generate new future possibilities.

My second chapter draws together many of the conventions and binary divisions established by early/proto posthuman and cyborg fiction by reading my core texts through a biopolitical lens. This exploration focuses on how technology mediates bodies and the environment, often through the enlightenment humanist politics that, in a capitalist economy, utilize contemporary forms of technologies to reduce all life—human and nonhuman—to bare life. The chapter begins with a basic overview of biopolitics and its transformation through biocomputing and genetics into “Biomedica,” where the body is transformed into information that can be distributed, owned, and reproduced and valued only for its “bio-value” as an object. It then traces the ways my focal texts envision biopolitical designations of life under future systems of corporate technoscience where forms of control and containment of bodies and exchanges between them often result in a destructive immunitary thanatopolitics. I also give attention to how my focal texts depict forms of resistance through an affirmative posthuman biopolitics that sees potential for healing and revitalization in allowing negotiated exchanges and breakdowns of traditional biopolitical divisions of human, animal, machine, born, made, nature, and culture. This chapter proposes my focal texts are connected by the theme of ‘infection’/‘contamination’ as a form of cure/vital adaptation, where the obsession with purity, be it the romantic notion of untouched nature or the genetic designations of “human” vs. “animal,” become not only damaging but also untenable for social and ecological diversity and health.

My third chapter moves from the posthuman biopolitics established in the previous one into a posthuman and materialist-feminist examination of the embodied partnerships that resist hegemonic boundary distinctions, offering dynamic and often fruitful interspecies partnerships that reject an anthropocentric privileging of “human” qualities such as consciousness as value markers. In exploring the often-estranging focus on nonhuman animal agents—including virtual ones—and their interconnections, interactions, and modes of being with humans, this chapter functions to both demonstrate how human-nonhuman entanglements deconstruct the nature-culture binary and to examine the productive possibilities offered by engaging in such partnerships. I aim to position these multispecies entanglements as occupying a positive site of resistance and suggest that these narratives offer future potential through their depictions of the many forms of negotiated kinships, multispecies communities, and new becomings that might emerge through recognition of shared vulnerability, nonhuman agencies, and empathy.

My final chapter utilizes the posthuman concepts of nonhuman agencies established earlier to specifically focus on the ecological politics in the texts and their active environments—countering how nature is often treated as passive in its depictions in many realist and science fiction texts. Focusing in part on the uncertain endings of all my focal texts, this chapter aims to connect that uncertainty with an assemblage concept of the environment and climate change, noting how the texts resist closure not only to subvert a utopic form of escapism but to also model the uncertain nature of our current environmental situation due to anthropogenic climate change. By returning to the concept of nonhuman agency, this chapter specifically explores how the environments destabilize anthropocentric notions of passivity and human control over ecologies through their instability and their complex interconnections that prevent them from being contained. In doing so, I suggest these narratives generate a space to reorient and resituate

the human as a part of a greater ecological assemblage that is enmeshed with technologies and nonhuman animals as well as the greater biosphere and its environmental spaces. Through establishing these situated environments, this chapter traces how the authors present a space of generative potentiality in their specific reorientations and how such a space functions within the future orientation of these works to invite imagining positive modes of ecological being and embeddedness. Such modes of embeddedness offer to ground readers to remain present in confronting the totalizing hyperobject of climate change. This chapter is followed by a brief conclusion that draws together the outcomes of each chapter and their significance for the genre and its potential direction in the Anthropocene. It also highlights areas of significance and potentials for further study in areas of posthuman climate fiction.

While it is more common to examine one or two texts in a chapter—or by taking a broad literary survey—by approaching my primary chapters exploring all my authors through specific theoretical lenses, this allows for the dissertation itself to take the form of an assemblage, drawing out shared areas of concerns that intersect and are entangled across these narratives. Connecting these texts through many nodes, my project exposes points of tension, similarity, and the spaces they create for readers to be alienated from normative views regarding agency, bodies, environments, and nonhuman animals, and to even be reoriented in their conceptions of them. The thinking employed in this dissertation and the imaginative ways of reconceptualizing and resituating the human explored in my work may also provide a framework for examining other works of environmental science fiction to also help expose their theoretical and thematic entanglements.

2. Cyborgian Origins: The Ghosts of Meat Machines Past

There are already many sources on posthumanism's genealogy¹⁴; my chapter, instead, traces posthumanism through its cyborgian origins and technological shifts to establish the foundational images and theoretical concepts that contemporary science fiction draws from in constructing posthuman beings. As much as theoretical posthumanism is not limited to literal cyborgs, it is necessary to review some earlier versions of the cyborg to show how contemporary science fiction still relies on various cyborgian posthuman configurations. This chapter traces the ongoing tensions between technology, bodies, humans, animals, and machines and observes their changes and continued struggles. I begin early in the chronology to establish a core philosophical problem that continues to haunt science fiction and posthuman ethics. This problem is the 'ghost in the machine': the division of mind and body articulated in Cartesian dualism and its philosophical offspring. This chapter then moves through some of the core theoretical ideas, technological inventions, and literary narratives that have and continue to influence the genre.

2.1 The Mind/Body Division

Cartesian dualism continues the Platonic belief in the separation of mind and body and its traditionally mechanistic view of the body. In "Treatise on Man," Descartes imagines the body to be "nothing but a statue or machine" fashioned by God (99). A "rational soul" is joined to the body-machine through the brain (102). In "The Passions of the Soul," he argues that while the body is responsible for movement and heat, the soul is responsible for thought (329). Descartes went as far as to insist that his mechanistic explanation could even account for actions such as walking and singing when they occur without the mind focusing on them (Cottingham 247). The body is thus posited as a sort of self-operating machine, one which, for humans, houses a

¹⁴ See Stefan Herbrechter's *Posthumanism* for one such example.

soul/mind capable of wilful thought and judgement. For Descartes, the soul, or “mind” as we might think of it, functions as a separate entity from the body it controls (Passions 339)

This separation of mind and body has had a significant influence on posthumanism in several ways. Firstly, Descartes’s mechanistic view of the world ushered in the automaton era (Dinello 35). Additionally, it presented a picture of potential immortality through a mechanistic view of the world that erased the line between living and dead matter established in Aristotelian philosophy (Cottingham 239). Cottingham expands on the significance of living and dead matter being one and the same by pointing out that “When this purely mechanical view of biology is combined with Descartes’s thesis that the conscious mind is a separate incorporeal substance, the upshot is that bodily death becomes, in a sense, wholly irrelevant to the question of personal immortality” (239). The separation of mind from body created by Descartes, coupled with the idea of an immortal ‘soul’/mind, implies that one could then potentially interchange the body with one of some other sort of matter so long as the mind is properly interfaced. Thus, the idea that one might replace the body and indefinitely transfer or preserve one’s consciousness, ensuring the immortality of the self, emerges from the Cartesian Dualist’s mechanistic view of the body. As Daniel Dinello argues:

Descartes’ conception of the mind as immortal and his mechanistic worldview were fused in the first decades of the computer age when cybernetics, artificial intelligence (A.I.), and information theory defined the human brain as an extremely complex biological information-processing machine. . . . In short, the human mind consists of patterns of information. (22-3)

By viewing the mind as a series of patterns within an organic computer, contemporary transhumanist perspectives of the body replicate the immortal view of the mind argued by Descartes, as well as the potential to preserve it through technological extraction.

Potentially separating the core mind from its biological machine has been highly influential in cyberpunk and transhumanist science fiction. Examining the tense and complicated relationships between bodies and cyberpunk, Kevin McCarron argues that through both its texts and films, cyberpunk “constitutes a sustained meditation, unrivalled in contemporary culture, on the Cartesian mind/body dichotomy” (261). This is perhaps best expressed in film, with many cyborg films exploring the Cartesian dualisms of mind/body, as well as those of gender (Holland 157). This long-reaching significance of the metaphysical division of the mind/body problem and its connection to A.I. and cyberpunk fictions is worth noting. If the mind is neatly housed in the body, theoretically it can be transferred to some new body-machine, even an electronic one, with no damage to the core self/mind within it. From Descartes to the present age, dualism is adopted by transhumanists¹⁵ and transformed into their belief that immortality can be achieved by replicating/copying the mind and downloading it into a computer or artificial body (Dinello 21). This faith in the secure transferability of the mind also contributes to humanistic ideas of a core, intrinsic, rational self that is separate from the body. Descartes’s mechanistic model of biology thus gave birth to the ‘ghost in the machine.’

While not the first to establish the division that elevated humanity above other living creatures, Cartesian dualism, coupled with Descartes’s mechanistic universe, had a significant influence on cementing that hierarchy (Kang 119), one that will be expanded on later. According to Minsoo Kang, beyond establishing a distinction between body and soul, Descartes separates

¹⁵ Examples of transhumanist works on engineering artificial minds and bodies include Ray Kurzweil’s *The Age of Spiritual Machines* (1999) and Hans Moravec’s *Mind Children* (1988).

animals from humans by reasoning that while both are God-made mechanical constructs, animals are purely machines, lacking the immaterial soul that provides humans with consciousness, reason, and speech (117). Descartes argues that if a man-made machine had the same shape and internal structures of an animal such as a monkey, it would be indistinguishable from an actual monkey (“Discourse” 138). In contrast, he argues that a machine resembling and able to imitate a human in body and activities would still be easily recognized as an imitation for two reasons: first, that they could not use language or means of expressing their thoughts, and second, that, while possibly equal or superior to humans in some ways, they would be inferior in others that would reveal they were acting based on their bodily ‘programming’ rather than comprehension (138). By this reasoning, a carefully crafted robotic animal would be indiscernible from a real one because they lack reason, whereas an automaton/android human would be easily identified for its inability to reason, speak, or imagine. Descartes essentially limited the rational soul to conscious experience and any effects he felt could not be explained by his mechanistic model (Hatfield 439). Thus, non-human animals fit into an entirely mechanistic explanation of their behaviour, while humans, in being the more complicated of God’s machines, could not be properly reproduced since they would lack a rational soul. By arguing a sort of proto-Turing test barrier to any potentially advanced forms of machine/artificial life, Descartes groups animals and machines together in a lower tier of the irrational. This hierarchy is maintained through liberal humanism and filters into science fiction, often through either the absence of animals or through their position as the Other by which the concept of human is defined.

2.2 Early Cyborgs

Descartes’s connections to automatons do not end at a mechanized view of biology; he also designed several clockwork machines (Dinello 36). Kang notes a famous legend claiming

Descartes constructed a female servant automaton whom he called Francine, only to have a frightened sea captain throw her overboard during a voyage (122). The impulse to create clockwork beings that behave and mimic those of lifelike creatures often translates into a desire to create mechanical servants and companions such as Robby the Robot or David from *A.I.* Contemporary robotics continues striving towards this goal, developing robots to fill various service sector and military roles, as well as aiming for a future where they serve as medical assistants and companions for the elderly. In my focal texts, the New People and the Miyako and Sonia clones in *The Windup Girl* and *Salt Fish Girl* show how this technoscientific ideal to create cheap labour crosses into biogenetics and potential for creating new forms of slavery through clones or biologically ‘manufactured’ people.

By the 18th century, animated dolls increasingly mimicked real life, with inventors like Jacques de Vaucanson creating musical players as toys (Dinello 36). In his discussion of early automata, Dinello references a gilded duck made by Vaucanson that “emulated the functions of eating, drinking, and digesting” (36). Vaucanson is one of the most famous inventors of automatons for his players because of the ways they imitated real life. The “*fluter automate*” was life-sized and played the flute¹⁶ by moving its fingers and emitting air from its mouth (Kang 103), while his duck famously seemed able to drink water, eat grain, and excrete pellets, thus mimicking natural biological processes (106). Later, more complicated automatons, such as the Draftsman and the Writer created by Jacquet Droz further blurred the line between “life” and machine by mimicking advanced and intricate tasks such as writing and drawing.

¹⁶ Simon Schaffer’s BBC Documentary “Mechanical Marvels: Clockwork Dreams” notes that Vaucanson created a device that appeared both life-like and reproduced the actual life process in his study of anatomy to construct a set of mechanical lungs, silver tongue, and positionable fingers for his flute player (00:25:07-00:25:32).

One very famous automaton is the chess-playing Turk created by Wolfgang von Kempelen. While technically not an automaton due to it being secretly operated by a person, von Kempelen's Turk represents two interesting turns in the development of the automaton, both of which resonate with the cyborg in the contemporary period. The Turk reflects late-Enlightenment culture in terms of being presented as an automaton that performed tasks most people believed a clockwork machine could not do. It was also "a vitalist illustration of the *impossibility* of man as machine and a challenge to the viewer to figure out how exactly human guidance and reason invisibly controlled its mechanism" (Kang 182). Revealing the "trick" behind the Turk, Schaffer identifies the way it anticipates a cyborgian hybridity, contending that despite being an artifice, it was a human pretending to be a machine that pretended to be a human, thus blurring the human-machine boundary (00:54.29-00:54.59).

The Turk also reflects a change in automata that shapes later cyborg identity. Automata in the late 18th century became foreign and exotic beings (Schaffer 00:37:48-00:38:15). Unlike Vaucanson's pale European players, the Turk reflects an otherness signalled by the growing imperialist trade markets with the East. Contemporary cyborgian and posthuman texts, especially post-Haraway, often reflect a similar otherness with cyborgs and genetically modified people coming to embody not only a blurring of human, animal, and machine but also as a symbol of racialized bodies such as the Sonia clones and New People in Lai and Bacigalupi's texts. The imagined production of cyborg bodies as exotic items to own presents an uncanny parallel to the way automatons started to be produced with racialized or exotic appearances for consumption in mass global markets. Cyborg others come to reflect and later explore the way actual human bodies of persons of colour were enslaved or indentured into dehumanizing, and often mechanical, positions for Western industry.

Despite largely being crafted for amusement and entertainment, these early automatons anticipate the desires of contemporary robotics to create lifelike and sentient AIs. Writing in 1720, Gottfried Wilhelm Leibnitz continued Descartes's mechanistic worldview, asserting that "the organic body of each living being is a kind of divine machine or natural automaton, which infinitely surpasses all artificial automata. For a machine made by the skill of man is not a machine in each of its parts" (64). Leibnitz's construction of the body and its parts as types of machines anticipates the machinic language we employ in descriptions of cells, DNA replication, and even the brain. Additionally, this human/machine distinction still proliferates in science fiction and popular culture, reinforcing a liberal humanist ideology through the inhumanity of the android/robot, or employing its Pinocchio-like desire to become human as a means of reasserting the superiority of the human species. Transhumanism, however, inverts Leibnitz's assertion that the human body is a superior machine, privileging advanced technology and its potential to preserve the mind beyond the imperfections and fragility of the biological body.

By the mid-1700s, a less positive view of automatons from that of the Enlightenment was entering Western thought. The idea of the machine-man came to denote a lack of autonomy and free will (Kang 148). Vitalism and its emphasis on the study of vital force that animated life had become a key focus in the study of medicine by the mid-18th century (150). It also served as a clear influence later in works such as *Frankenstein* where Victor's obsessive object of study leads to making the Creature in his quest to reanimate dead matter with such a "vital force," thus transforming it into living matter. Vitalism and sentimentality never fully supplanted the mechanistic worldview, instead, an increasing polar tension emerged between the two (158). This tension informs the continued entrenched divisions that we place between living things and non-living things through the binaries by which we separate humans from other creatures,

technology, and nature, a preoccupation central to my later chapters as the value of life is depicted as being continually decided along lines of born versus made.

This schism continued to grow during the industrial revolution in the 19th century when machines and automatons irrevocably altered the lives and jobs of labourers. The fear of machine-driven obsolescence and the depiction of machines as ‘less-than-human’ continues even today where occupations that involve repetitive tasks are seen as making people become mindless automatons. These tensions appear in popular culture in the form of fears of cyborgization and the forced assimilation of the body by technology. The Borg from *Star Trek*, especially *Star Trek: First Contact* (1996), and the Cybermen in the *Doctor Who* series are two such examples where being machine-like in action or thought is to be sub-human—even monstrous—with cyborgs and androids troubling this divide, questioning how we define humanity.

Two years before the publication of *Frankenstein*, ETA Hoffman published his popular story “The Sandman.” In it, the protagonist Nathaniel becomes increasingly obsessed with Olympia, the daughter of one of his professors, and experiences a mental breakdown when it is revealed that she is an automaton. Everyone but Nathaniel recognizes that something is not quite right with Olympia, referring to her as a “wax-faced, wooden puppet,” who is oddly “stiff and soulless” with eyes “completely devoid of life” (239-40). Nathaniel’s friend Siegmund candidly tells him that “she seems to us to be playing the part of a human being” (240). Despite these warnings, Nathaniel’s troubled mind confuses the lines of living and non-living beings; he perceives Olympia and her limited ability to repeat “Ah, ah” as being incredibly profound and a sign of her liveliness (241), while thinking of his fiancé as “cold in disposition” (230) and accusing her of being a “damned lifeless automaton” (232). Hoffman creates an uncanny blurring

of a living person being perceived as an unfeeling, cold-hearted machine, while the dead-eyed automaton becomes lifelike enough for Nathaniel to desire to marry her.

Hoffman's story anticipates the anxiety of that blurred boundary, not only in the villagers' fears that they may be inundated with androids and Nathaniel's choice of a 'fake' woman over a real one but also in the presumed criminality of an automaton passing as a human. Present-day science fiction continues to reproduce these same anxieties through stories of evil clones and A. I., android armies, and cyborgs that challenge human uniqueness in their abilities to pass as fully human, such as the replicants in Philip K. Dick's *Do Androids Dream of Electric Sheep*. It also introduces the seductive power of technology in the form of the automaton to disrupt human relationships, a motif that appears both in *Frankenstein* and Fritz Lang's *Metropolis*. Nathaniel's desire for Olympia because he feels she is an ideal woman construes her as a threat to women in her ability to entice men. Dinello suggests that Olympia prefigured such seductive and aggressive roles as Hel in *Metropolis* and TX in *Terminator 3* (40). Olympia also demonstrates an early example of the feminization of technology and the sexualized 'fembot' form of those female cyborgs that later emerge in science fiction.

Hoffman's "The Sandman" contributed to expressing certain anxieties regarding science and technology, especially by juxtaposing them with the image of an infernal inventor and the subsequent madness and tragedy for those like Nathaniel. Mary Shelley's iconic novel further explores the question of what constitutes natural and unnatural through Victor's creation of an artificial man through science. This act of creation is heavily steeped in both the Promethean and Genesis myths which continue to inform cyborg narratives. As with many later works, Victor's choice to create life is filled with human vanity in his hope that "A new species would bless me as its creator and sourceNo father could claim the gratitude of his child so completely as I

should deserve theirs” (36). His desire to ‘father’ a new species has received special focus for his decision to usurp the assumed natural order of things. Mary Poovey argues that in his arrogant vision of eternal life, “Frankenstein would deny relationships (and women) any role in the conception of children” (85). This is echoed by Margaret Homans’s argument that Frankenstein “revises this paradigm for artistic creation: He does not so much appropriate the maternal as bypass it, to demonstrate the unnecessariness of natural motherhood and, indeed, of women” (138). The gendered tropes of a male scientist as creator and, all too often, a female ‘motherless’ cyborg or manufactured person as the creation continue to be replicated and critiqued by contemporary works, including many of my central texts.

The blurring of the line between natural and unnatural offers the potential to transgress such roles traditionally used to define the female sex. While later texts may delve into the potential freedoms of creation, *Frankenstein* presents Victor as one who desires the power to create life for himself but shows little compassion for others’ reproductive urges—neither his betrothed nor the Creature’s¹⁷. Victor denies the Creature the right to a companion of his own kind because he is convinced that he will also desire children and will produce offspring “who might make the very existence of the species of man a condition precarious and full of terror” (138). His fear of the creation of a ‘new race of monsters’ identifies Victor as a creator who brings about life in one obsessive stroke, only to abandon his creation and then deny it companionship and the ability to have offspring¹⁸. He perceives the potential of a new race existing as threatening humanity by creating a system in which they exist outside it, rather than

¹⁷ I primarily use “the Creature” in my references to him. While it problematically renders him abhuman, it is better than objectifying him as “it” or “Frankenstein’s creation.” Using the Creature also draws attention to Victor’s perceptions of him as an Other, along with a posthuman embracing of monstrous identity.

¹⁸ Jenny Sundén’s feminist interpretation of Victor’s reproductive fears in “What if Frankenstein(’s Monster) suggest they stem from Victor believing the Creature’s mate would prefer human men (149).

at the heart of it (Botting 113). Victor's actions reflect a typical anthropocentric fear regarding a situation that may cause humans to not only lose their established species dominance but potentially be removed entirely from the social and natural systems at play in the world. This fear still exists in many posthuman works and is one both Bacigalupi and Lai examine in terms of its biopolitical consequences. As noted by Fred Botting, the "Myth of Frankenstein reanimates, albeit in a different form, anxieties which lie at the core of humanist subjectivity, anxieties concerning its authority and power" (189). This is especially true in the more recent period of science fiction where cloning, genetics, and advances in artificial intelligence have inspired texts like *The Windup Girl* and *Salt Fish Girl* to explore posthuman subjectivity, as well as legal rights for artificial humanoids—especially over things like reproduction and their independence as subjects.

The binary line between nature and technology further plays out between how Victor's act of creation and the Creature are perceived. While Victor denies relationships for his science, the Creature seeks them only to be rejected by humanity. He "is 'made,' not born, and, as the product of the unnatural coupling of nature and the imagination, is caught in the vortex of death that will ultimately characterize Frankenstein as well" (Poovey 90). Being 'made' rather than 'born' places the Creature outside of the natural order of family and community, marking him as firmly other and leaving him to desire those things he was denied; thus, he becomes an inverse of Victor's desire to supplant family and community through technology. It also demonstrates an early division between nature and technology, one which proliferates in later science fiction alongside the motif of the male scientist seeking to vainly create in his own image. Carlos Seglio characterizes this division between nature and technology as being represented in the patchwork sutured body of the Creature, who embodies the difference by being a hybrid of both (82). The

fact that the hybrid identity of the Creature muddies what it means to be natural or ‘man-made’ is arguably what makes the narrative so iconic.

Frankensteinian undertones pervasively exist in popular culture through narratives that warn of ‘forbidden knowledge’ and arrogant scientists. These tropes underscore a broad variety of science fiction and cyborgian works including, but not limited to, the creation of killer robots like in the *Terminator* films, mutating viruses/bio-plagues as in Greg Bear’s *Blood Music*, and, especially, hybrid creatures such as those in H. G. Wells’s *The Island of Doctor Moreau*. Philip K Dick’s *Do Androids Dream of Electric Sheep* returns to *Frankenstein* through the confrontations between humanity and their replicant creations. The culturally understood cautionary narrative has also become associated with the realm of cloning and genetic modification, with the term “Frankenfood” applied to genetically modified foods and crops (Herbrechter 89).

One final and important legacy of *Frankenstein* that is significant to my work is the extent to which the Creature challenges the boundaries of the human. Jasia Reichardt argues that “only a human being or a humanoid can be a true monster . . . the essential condition for a monster is that the human characteristics it possesses must not be changed too far . . . Transforming a person into a monster is achieved by the exaggeration of one or two features” (139). Monsters must, therefore, have recognizable human qualities against which the nonhuman ones render them abhuman. Monsters are characterized by their “incoherent bodies” which resist and reject classification within our structured systems, thus making them threatening by occupying a liminal position that defies categorizations (Cohen 6). Monsters serve as markers of boundaries and structures of exclusion, often involving criteria based on appearance (Nayar 84). In his heterogeneous and monstrous hybridity, *Frankenstein*’s artificial man laid the groundwork

for exploring and destabilizing concepts such as the subject and embodiment that cyberfiction reshapes (Hollinger “Retrofitting Frankenstein” 193). The Creature’s appeal for equal rights has become a narrative that continues to play out, voiced by robots, clones, cyborgs, and animal others, including through Lai’s clones and Bacigalupi’s New People.

Fears of a supplanted humanity also emerged after Charles Darwin’s *The Origin of the Species* (1859), which would later inspire numerous literary works imagining what the laws of natural selection and evolution might mean for the human species if they did not guarantee our survival. Darwin’s theory of evolution contributed a few very significant ideas to science fiction and popular culture, the first being atavism and the fear of degeneration—that evolution was not a perfect rise in progress. The second was that humanity had not always been on this earth and could—under certain conditions—become extinct themselves.

In *The Origin of the Species*, Darwin observes that while natural selection seeks to preserve beneficial variations; those less favoured forms can eventually become extinct (153). *Origin of the Species* almost exclusively discusses known species of animals, plants, birds, and insects, but it was also extrapolated towards humans later in *The Descent of Man*. As a result, Darwin’s theory was controversial because it challenged the idea of humanity as a unique and privileged special creation by God (Burrow 15). If other species could become extinct, so too could human beings. The chance that if it could select for traits that might favour survival over qualities deemed culturally significant to humans thus emerged. Fears of degeneration and extinction inspired works by H.G. Wells and generations of other science fiction writers.

Atavistic anxieties continue to present themselves in posthuman works by engaging with Darwin’s point that similar species tend to put pressure on related species, and by expressing anxiety regarding humanity’s evolution—especially as guided by environmental and social/class

pressures. This includes Bacigalupi's contemporary short story "Pump Six" which features environmentally driven posthuman degeneration. The fear Victor Frankenstein expressed of a sentient species similar to humans and equally as intelligent plays out in science fiction in concerns of stronger or hyper-rational robots/cyborgs taking over. Figures from popular television shows like the Borg and *Battle Star Galactica's* Cylons threaten to supplant humans as the dominant species through combinations of superior intelligence, technology, and better adaptability. In the instance of atavism mentioned previously, H.G. Wells and Peter Watts both explore the openness of adaptation and Darwinian natural selection, emphasizing that what survives in certain environments and conditions may not be the qualities or traits that are seen as most human. Works like Watts's *Rifters Trilogy* challenge the idea that evolution is a simple path towards some idealized perfection. The span of these texts from the late 1800s to the present century demonstrates the pervasiveness of atavistic anxieties regarding humanity's position and survival in the world, especially amidst advances in biotechnology, cloning, and robotics¹⁹.

Beyond generating fears of extinction or atavistic degeneration, Darwin also presents an ontological contribution towards the positioning of humans within a system of being. Rather than perceiving *Homo sapiens* as special divine creations, he positions them within a linked network of other creatures. Many still position humanity at the top of the divergence tree today, so it is significant that Darwin situated humans within the same evolutionary set of connections as other animals. Darwin demonstrates physiological commonalities between humans and mammals, including shared diseases—particularly with monkeys and apes (*Descent of Man* 11-12), and deep similarities in early embryonic development (14). He eventually goes on to directly link

¹⁹ While my work does not discuss zombies, their revival in popularity through films like *28 Days Later* (2002), *Zombieland* (2009), *World War Z* (2013), and *The Walking Dead* (2010-present) attest to ongoing atavistic anxieties that still exist regarding posthuman life.

humans to other vertebrate animals through “their community of descent” (32). This contributed to the general public eventually accepting of our common descent from apes and led to further research into interspecies commonality and shared origins. Darwin’s work thus prefigured a posthuman understanding of humanity as linked to other animals, not just sharing the world but also sharing biology, ancestors, and functional commonalities. He further demonstrates that seeing life as ecologically linked is not a new idea, even to Western thought²⁰, writing that “plants and animals, most remote in the scale of nature, are bound together by a web of complex relations” (124-5). While Darwin omitted humans from his comparison in *The Origin of the Species* and carefully set up *The Descent of Man* to problematically position ‘civilized’ Europeans as having the highest developed faculties of reason, posthuman and ecological thinking has built upon the initial commonalities established by Darwin and attempts to reinsert humans back into the concept of the ecosystem.

Wells’s *The Time Machine* (1895) and *The Island of Doctor Moreau* (1896) reflect the atavistic anxieties and fears that humanity could devolve into a lower sub-human, or even animalized, form that Darwin’s treatises generated. Nicholas Ruddick’s introduction to Wells’s *The Time Machine* identifies that Wells engages with Darwin’s theory of evolution as well as the works of his contemporaries, including Herbert Spencer’s concept of steady progress towards perfection and T.H. Huxley’s argument that the cosmos is indifferent to humanity and its survival (31). In *The Time Machine*, upon travelling into the future, the Time Traveller encounters two divergent forms of humanity, the peaceful and childlike Eloi and the subterranean and predatory Morlocks. The Time Traveller initially assumes that he will meet a

²⁰ While Western cultures have tended to ignore the interdependencies of species, leading to documented extinctions, non-Western cultures, especially Indigenous cultures, have significantly longer histories of situating humans and other species within a system of inter-dependence.

form of evolved humanity so advanced that “the whole world will be intelligent, educated, and cooperating’ things will move faster and faster towards the subjugation of Nature . . . we shall readjust the balance of animal and vegetable life to suit our human needs” (Wells, *Time Machine* 91). Upon meeting the beautiful childlike Eloi, he initially assumes their lower intelligence and weaker bodies are the result of this technologized ‘golden age’ bringing about a diminished need for struggle or inventiveness (McLean 17). The Traveller’s predictions embody Spencer’s idea of the continual progress of humanity towards perfection, only to turn it on its head by having near-perfection and mastery over nature lead to degeneration. It also speaks to the historically rooted anthropocentric values which position nature as existing for humans to dominate.

The overall horror of the Time Traveller’s narrative is achieved through him remaining in space while travelling forward in time, eventually passing beyond the time of the Eloi and Morlocks to the farther future where no semblance of human-like life exists and some remaining lifeform of crab-creature postures on the shoreline (Ruddick 43). By shifting time but not space, the Traveller creates a narrative that moves towards their degeneracy and extinction rather than towards ultimate progress and perfection. His discovery of the machinic underworld tended to by the hideous and “barbaric” Morlocks only heightens this experience of horror. Entering the Palace of Green Porcelain, the Time Traveller discovers “the ancient monument of an intellectual age” that contains a Gallery of Palaeontology and greatly corroded machines (Wells, *Time Machine* 128). The evidence that humanity achieved a peak and then collapsed reflects the cultural fears of Wells’s society. Ruddick notes that “It was feared that humanity in the 1880s might actually have reached its peak, and down the darkling road ahead lurked devolution and extinction” (31). Steven McLean further supports this position, identifying Wells as siding with Huxley’s model of degradation and his position that there is an error in assuming that evolution

translates into an assured tendency towards increasing perfection (24). As a result, Wells's early posthuman text creates an anti-utopic vision of future progress hinging on cultural anxieties of degeneration and that 'progress' may lead to collapse. These same anxieties resurface in contemporary science fiction, often in works set after a great economic or social collapse, such as in Bacigalupi's *The Windup Girl* where the great expansion and biotechnologies of our age only lead to a collapse in the future.

Wells furthers his vision of a potentially horrific future for humanity through the hideous Morlocks. In contrast to the beautiful and childlike Eloi, the Morlocks are subterranean and animalized in the eyes of the Time Traveller who is uncertain whether they ran on all four legs like an animal but describes a Morlock he encounters as a "queer little ape-like figure" having "large greyish-red eyes" and "flaxen hair down its head and back" (Wells, *Time Machine* 107). This first encounter with the Morlocks leaves him to conclude that humanity had split into "two distinct animals" (107). Based on his experiences, The Time Traveller determines that the advances in technology and industrialization resulted in a slow but eventual degeneration along class lines with the Eloi descending from the languishing upper class and the Morlocks descending from the working poor who were employed in poorly lit factories. While both degenerations of 'humanity' are meant to be interpreted as undesirable, it is worth noting that Wells's divergence through class is rooted in a class prejudice that dehumanizes the lower classes in their future Morlock evolution. The narrator describes the Morlocks as "nauseatingly inhuman" (117). He finds them especially repulsive after he deduces that the Morlocks only see to the needs of the Eloi to render them "fatted cattle, which the ant-like Morlocks preserved and preyed upon . . ." (125). Beyond the Morlock's physical otherness, the fact that they have resorted to a form of near-cannibalism by feeding on another sentient species adds to the Time

Traveller's perception of them as abhuman and monstrous—even though they are more technologically and intellectually capable than the Eloi.

While more scientifically inclined, degeneration driven by environmental and technological adaptations continues to be a preoccupation of posthuman science fiction. Two such examples would be the rifters in Watts's trilogy who adapt fully to life in the Pacific rift and eventually develop regressive, almost reptilian, behaviour due to sensory deprivation. Another would be the seal-like future descendants of humanity in Kurt Vonnegut Jr.'s *Galapagos* (1985). Similar fears of the degeneration of both humanity and the individual appear in Wells's *The Island of Doctor Moreau*. Rather than dealing with a future of degenerate humanity, Wells's narrator Prendick finds himself stranded on an island with the Doctors Montgomery and Moreau and soon discovers that the island is home to the victims of Moreau's grotesque vivisection experiments that attempt to achieve human-like intelligence in animals.

The Island of Doctor Moreau combines the Frankensteinian 'mad scientist' who suffers the wrath of his creations with fears of degeneration. Moreau's attempts to master and control nature, bodies, and evolution through technology and conditioning connects him with Frankenstein and marks a close parallel to contemporary "techno-prophets, who believe that perfecting humanity means technologizing the body" (Dinello 44). While engaging with the scientific discussions around animal ethics, evolution, and social progress, Wells's novel is also the site of several ongoing tensions regarding the hybrid body which continue in posthuman literature through the cyborg. Prendick's first encounter with one of the Beastfolk is on the ship where Montgomery rescues him. Montgomery's servant M'ling is described by Prendick in both animalistic and racialized terms with a shocking black and deformed face that "was dimly suggestive of a muzzle" (Wells, *Island* 17). Prendick's later encounters with the Beast People on

the island further unnerve him and position them firmly as other: “Each of these creatures, despite its human form, its rag of clothing, and the rough humanity of its bodily form, had woven into it . . . some now irresistible suggestion of a hog, a swinish taint, the unmistakable mark of the beast” (56). Like the Creature in *Frankenstein*, the Beast Men are othered not just in their appearance but in their entire being. While Prendick does not fully comprehend why he experiences such unease with them, the reasons seem to stem from their alien behaviour and the fact that they hybridize the boundary between beast and human. While their appearance may be grotesque, their mixing of strange and familiar through their possession of both human and animal qualities is what renders them horrifically other to him.

Moreau acts as the other side to this straddling of boundaries; while the Beast Men are perceived by Prendick to be grotesque for their imperfect humanlike forms and behaviour, Moreau is monstrous for his cruel experiments on them. When Prendick hears horrific screams coming from Moreau’s lab and sees his recent victim bandaged beyond recognition, he wonders if Moreau is vivisectioning humans (Wells, *Island* 67-8). Rather than humans, he is torturing beasts to turn them into Beast Men in attempts to perfect his experiment to create ‘human’ animals. His cruel methods include grafting the flesh of multiple animals onto the creatures and then conditioning them with inhumane punishments for those who break “the law”. The Ape Man, for instance, sports a scar on his hand from Moreau branding him for “jabbering” (81). Even after discovering the true nature of the Beastfolk, Prendick still pities them and expresses sympathy for their physical and psychological suffering, recognizing that “Before they had been beasts, their instincts fitly adapted to their surroundings, and happy as living things may be. Now they stumbled in the shackles of humanity, lived in a fear that never died, fretted by a law they could not understand . . .” (127). The Beastfolk straddle the boundary of human and animal as an

involuntary combination of the two; their humanized bodies are forced into a constant struggle with their animal instincts, leaving them in a state of perpetual torment. Thus, though it does not explore the liberatory potential of hybridity examined by later posthumanist works, Wells's text illustrates an early example of attentiveness to the embodied pains of hybrid existence.

Like Victor Frankenstein, Moreau's experiments establish him as a scientist who has tried to elevate himself into a godlike position over creations he made for his own selfish obsessions. The Beastfolk are all taught to recite "the Law" in which Moreau is set up as a godlike figure affiliated with pain, creation, suffering, and healing (79). Unlike Frankenstein, Moreau does not abandon his creations, but he does condemn them to a tortured abhuman existence where they are all deemed failures, who are allowed to exist but are never accepted as a "success" because they always regress (Vint, *Animal Alterity* 189-90). Vint argues that part of Moreau's mistake is that he "exempts humans from the category of animality" and reinforces a divide between the human and animal through subjectivity (190).

Considering that Moreau's inhumane vivisection experiments are what caused him to be exiled from England, it is ironic that he considers them a humanizing process. Moreau's exodus from England where his experiments gained notoriety as the "Moreau horrors" situates them amidst the then-recent clashes over animal experimentation after the passing of the Cruelty to Animals Act of 1876²¹. Susan Hamilton traces the complicated fallout of that act and the fights for animal protections from medical and scientific experimentation that would continue into the early 1900s. She observes a growing rift between the scientific community's beliefs that experimentation was necessary for human advancement and the animal welfare movements. *The Island of Doctor Moreau*, therefore, draws together these discussions around the cruelty and

²¹ *The Isle of Dr. Moreau* was published 20 years after the passing of the Cruelty to Animals Act of 1876 which attempted to establish state controls over animal experimentation and placed numerous restrictions on vivisection.

suffering of animals, their potential for sentience, and posthuman creation. The tensions between scientific experimentation and animal rights are something Atwood continues to explore in her *MaddAddam* trilogy through the lab-engineered pigoons and ChickieNobs.

Wells's work does not present the critical posthumanist position of what Rosi Braidotti and Cary Wolfe term a "zoontology," one that represents non-human animal's complexity (Braidotti, *the Posthuman* 79). Instead, it offers animal intelligence that is achieved through a process of humanization—one which ultimately fails to take, resulting in the fears of degeneration. Further, Wells problematically racializes the Beastfolk as being similar in characteristics to "primitive" peoples (McLean 52). Wells's fears of racial and socio-cultural degeneration are echoed by other quasi-posthuman texts from around the same time including Robert Louis Stevenson's *The Strange Case of Dr. Jekyll and Mr. Hyde* (1886), E.M. Forster's "The Machine Stops" (1909), and H.P. Lovecraft's *The Mountains of Madness* (1936).

Such racialized hierarchy within an evolutionary model is, unfortunately, also repeated in later imaginings of cyborgian bodies and forms as racialized and animalized others who are denied consent or rights and freedoms due to their being combinations of animal and machine. Pointing to animal studies, Nayar observes that humanity defines itself by denying the "illegitimate animal within itself, by seeking an expulsion of the animal inside, as the presence of the animal makes the human monstrous" (85). Wells's established continuum between humans and animals further reflects anxieties of atavism through the possibility that if such beasts can be humanized, then people might also become animalized.

The tensions Wells expresses regarding science, medicine, and humanity only intensify in the post-industrial and WWII period. Both of Wells's early texts fit with what Jon Turney identifies as the late 19th century's eugenics movement in Britain, which achieved a high point

just before WWI. Turney regards this idea of “racial decline” as constant with a “vulgar Darwinism” (60). This early relationship between posthuman/cyborgian texts and eugenics continues as cold war texts generated fears of mutations and technology became portrayed as a means of achieving biological and genetic perfection. As the industrial revolution brought sweeping changes including the automation of factories, railroads, and new forms of energy, machines also took on associations of power and domination. Kang asserts that the numerous monstrous depictions of machines from this period stem from the seemingly unstoppable growth of industrial progress (242). This image of the industrial machine was one of an “irrational, terrifying, destructive, and superhuman entity” imagined by those who felt industrial progress had moved beyond human control (243).

Not all these depictions were terrifying, however; some, like Auguste Villiers de l’Isle-Adam’s 1886 novel *Tomorrow’s Eve* featured a positive depiction of technological advancements and automation²². *Tomorrow’s Eve* introduces a fictional Thomas Edison who plans to help his friend Lord Ewald by transforming Hadaly—the robot he has created—into the image of the vapid actress Ewald loves. Edison explains that Hadaly is not a living being, yet she has been reproduced to give “the *illusion* of life” (60), and he goes to great lengths to instruct Ewald on how to manipulate her to make her a “*human machine*” (81). Edison not only breaks women down into machines in his description of how to maintain her (taking in tablets of compounds, bathing in photographic solution, etc.), he also models an early example of the typically male scientist attempting to improve humanity, especially the ‘female sex.’

Once Hadaly’s transformation is completed, Ewald falls deeply in love with her; however, the mind of the machine that he falls in love with is not generated from Edison’s

²² *L’Eve Future* in the original French editions.

technoscientific genius. Its source is the supernatural feminine spirit named Sowana who has been aiding him with his work. Villiers inverts Descartes's assertion that a human-machine is not occupied by a soul by having an android that is controlled by a spirit—thus asking if it might be considered a living being (Kang 246). Ewald is convinced of her humanity because of her consciousness, while Edison is still convinced that Hadaly is an automaton that cleverly projects the illusion of being alive through his mechanical genius. This presents an interesting, gendered implication. On the one hand, an android woman who rivals its original human model has been created through the use of technology and spiritualism; yet, on the other hand, the misogyny of the text is subverted by Sowana's crucial role of bringing Hadaly into a state of consciousness (246). Despite Kang's argument that the text subverts Edison's misogyny, I argue Hadaly becomes another forerunner for the fem-bot, where feminized machines are created not only to improve upon the perceived flaws of women but also to serve and please the wills of the men who create and possess them. Works like Villiers's also contribute to the feminization of technology which re-emerges as a major feature of the cyberpunk subgenre.

After the war, the cyborgian construct takes on a much more dangerous form in Fritz Lang's iconic film *Metropolis* (1927). On some levels Hel's creation parallels that of Hadaly's as an object of desire to fulfill the wishes of men; however, it sharply diverges with the monstrous image of an industrial machine and demonic female robot²³. The film creates a troubling image of feminized technology and casts doubt on the power of male rationality to control it. Initially, the machinic future seems completely under control; the over-city is neatly ordered, workers labour at clocks, even Hel, when she is first shown to Joh Fredersen by Rotwang, seems fully under his control with obedient movements. Hel's dangerous potential is only subtly hinted at by

²³ The term robot was first introduced in the 1920s by the Czech play *R.U.R* by Karel Čapek (Turney 97).

the fact that Rotwang admits to having lost a hand in creating her (*Metropolis* 00:44:45). But as Hel takes on the form of a “vamp” version of Maria, her dangerous sexuality elicits violence and hysteria which drive the city into a state of chaos, a shift which Andreas Huyssen identifies as mirroring the theme of technology running out of control (207). Furthermore, Hel’s mechanical origins directly connect the power of technology—and its threat to the men who seek to control and dominate it—with the seductive powers of female sexuality, which also cannot be so easily controlled. This may well be why there is a scene of ‘unmasking’ Hel, revealing her nonhuman identity as she burns in a scene reminiscent of a witch-burning (*Metropolis* 02:19:24). Similar unmaskings and their dehumanization of the cyborg/robot become quite common, repeated in many films featuring evil robots/cyborgs including all the *Terminator* films and the Borg Queen in *Star Trek’s First Contact*.

The fact that Rotwang was able to have Hel take on the exact likeness of Maria in the first place also represents what Claudia Springer identifies as the fear of the “feminization” of technology and culture (10). Springer observes that the cyborg comes to signify a dual-threat through its combination of technology and feminized body. The threat is only eliminated at the end when order is restored, and the cyborg is destroyed (151). Hel’s body mixes uncontrolled female sexuality with dangerous technology, two things the film presents as threats that must be brought under control in order to restore patriarchal power.

2.3 Post-war and Cold War Cyborgs and Biological Science

The growing conflict between humanity and machines was also demonstrated in many texts during the interwar period. Turney argues “The development of biology in capitalist industry symbolises the tendency to make machines of men and men of machines” (99), something still very much relevant in my contemporary focal texts and their biopolitical

concerns with corporate biogenetics. Bertrand Russell predicted in *The Scientific Outlook* that “men will acquire the power to alter themselves, and will inevitably use this power” (120). Aldous Huxley took this to heart when writing *Brave New World* (1932). In Huxley’s novel, ectogenesis and conditioning are used to produce a caste society with Alphas and Betas living lives of leisure and holding positions of power and responsibility, while Gammas, Deltas, and Epsilons live lives of hard drudgery. Turney argues that in Huxley’s novel, “the biological bases of all human social life are transformed by the whole range of techniques then thought to be on offer: Hereditary selection, chemical and psychological conditioning, depressive and euphoric drugs, enforced contraception, prolongation of youth, and euthanasia” (113-14). This results in a society where nearly every moment of life is highly regulated, prefiguring what Foucault would later classify as society regulated through biopower and its discipline and control of bodies through technologies. While not termed ‘cyborgs,’ Huxley’s depictions of the different social divisions being developed in *Brave New World* offer frightening posthuman visions of bodies produced entirely through technology. The cyborg that emerges out of the 1980s and 1990s brings this idea of the constructed body and subject to full fruition through cloning and the mass production of human bodies as a consumer product.

The post-war and Cold War periods were culturally marked by numerous apprehensions regarding radiation and nuclear destruction. M. Keith Booker identifies these degenerative anxieties as being similar to those expressed during the colonial periods. Booker contends that there was a resurgence of fears of degeneration during the 1950s connected largely to the idea that mutations from radiation exposure could result in evolution or degeneration (9-10). Stories such as Judith Merrill’s “That Only a Mother” (1948) offer powerful examples of this anxiety and the increasing public fears of impending destruction.

In “That Only a Mother,” the then-pregnant Maggie mentions reading about growing infanticides to her husband in a letter saying “they can’t seem to get a jury to convict them. It’s the fathers who do it. Lucky thing you’re not around, in case—” (13). After the birth of their baby, Maggie writes to Hank about how beautiful she is, but her descriptions indicate that their child is abnormal since she can speak full sentences and possesses a “four-year-old mind” in a “ten-month-old body” (16). Beyond Maggie’s anxieties regarding mutations, her omissions in her letters to Hank that indicate her underlying fear for her child’s survival. Merrill’s text critiques the way mutations are viewed socially. At one point Maggie recalls reading an article that declares “it was too soon for recessives, even the first mutants, born near Hiroshima and Nagasaki in 1946 and 1947, were not old enough to breed” (17). While Maggie outwardly appears untroubled by what she has read, it implies that the scientific authorities are concerned with the increase in mutations and its implications for the human population if those possessing mutations were to produce offspring. Merrill’s story offers an example of Turney’s point that “the biologically neutral term ‘mutation’—merely the motor for natural selection—had begun to acquire much more highly charged popular meanings before the war, but they were now greatly amplified” (127). Mutationality continues to be a source of posthuman horror in science fiction, though more recent posthuman narratives, my focal texts included, also explore its more positive potentials for change and adaptation.

While many post-war associations of mutations in science fiction were negative, Merrill’s text offers a more balanced perspective. Maggie’s child is only one example; however, she possesses a set of mutations that are mixed, having no arms and legs but a high intelligence and beautiful singing voice. Merrill’s story is one of many that present exposure to radiation as a means of posthuman change; it is a common feature of comic heroes, horror films, and science

fiction novels, with many of them falling into either the fully monstrous or superhuman camps. Posthumanism's relationship to mutation has more recently sparked discourse from disability studies, exploring the portrayal of disabled, mutant, and superhuman bodies. Fears of contamination and mutation have also changed to focus more on mutations resulting from environmental or genetic causes such as those in Bacigalupi's and Lai's novels.

The post-war period also underwent great advancements in the field of biology. Figures such as Herman Müller, who became the founding president of the American Society of Human Genetics, laid the groundwork for studies of chromosome aberrations and also paved the way for the eventual establishment of the Human Genome Project (Turney 141). At the same time, cybernetic advances also led to the appearance of robots and cyborgs in popular science fiction films and novels. Booker argues that examples such as Asimov's robot fiction show the majority of science fiction in the 1950s depicted the positive effects of technoscience to expand on human possibilities (32). Despite this trend, other authors decidedly offered less-friendly images of robots in the 1960s, especially in their increasing human appearances as androids that obscured the human-machine boundary (Booker). As robots gained more human-like appearances, they introduced the frightening possibility that we may someday not be able to tell the difference between ourselves and machines; this possibility would inspire later works such as Philip K. Dick's *Do Androids Dream of Electric Sheep* and the *Terminator* franchise.

The 1950s also produces more entrenched depictions of the destructive masculine cyborg. Both Alfred Bester's *The Stars My Destination* (1956) and Bernard Wolfe's *Limbo* (1952) affiliate cyborgization with war. Booker argues that the motif of becoming "more machine than man" addresses the 1950s trepidations that the increasing technologization and regimentation of life were turning people into machines. This concern had increased considerably by the

cyberpunk movement of the 1980s, and Booker even suggests that *Limbo* prefigures cyberpunk through the way the protagonist's body has been largely modified for fighting (62). *Limbo* features military cyborgization of athletes who have volunteered to become amputees in exchange for high-tech prosthetics that make them capable of superhuman feats. Lisa Yaszek contends *Limbo* reflects the then-present possibility of Soviet research into automated prostheses for amputees and American research into potential implants for the blind and deaf and to treat Parkinson's disease (8). Wolfe's vision of prosthetics is also connected to Norbert Wiener's pioneering work in cybernetics (Booker 79), with Wiener being a major influence in cyborg and posthuman theory and science fiction.

Cary Wolfe traces posthumanism back to post-war cyberneticists such as Wiener, John von Neumann, Gregory Bateson, Warren McCulloch, and Alan Turing, arguing that they came upon new models for "biological, mechanical, and communicational processes that removed the human and *Homo sapiens* from any particularly privileged position in relation to matters of meaning, information, and cognition" (C. Wolfe, *What is Posthumanism?* XII). Yaszek argues that cybernetics offered new means for the modelling machines and the human body so that it "seemed to close the conversational gap between these two previously distinct categories. In doing so, it also suggested that the heretofore closed or intact biological body—like its technological counterpart—was essentially an aggregate of components available for de- and reassembly" (8). Additionally, cyberneticists like Turing and Wiener both "positioned cognition as a kind of bodily effect" and put forth a novel definition of the body as a form of communication network that acted on and adjusted to its environment through reproducing messages and signals accurately (7). Turing's imitation game/Turing Test implicitly shifted consciousness out of its traditional space in the human body, positioning it as an effect arising

from the interaction among bodies (6-7). Wiener and Turing's work anticipates many of the theoretical goals of posthumanism, including its attempt to rethink the body and break down normative divisions that separate forms of life and human beings.

Even before Haraway articulated her influential cyborg theory, the term was originally coined by Nathan S. Kline and Manfred E. Clynes in their article "Cyborgs in Space" (1960), where they argued that future developments in cybernetics may aid in adapting human bodies to new environmental conditions like those of outer space (26). Defining the cyborg, they posited that it "deliberately incorporates exogenous components extending the self-regulatory control function of the organism in order to adapt it to new environments" (27). Through their definition, the cyborg becomes a being able to overcome the evolutionary limits of the body through technological adaptations (Yaszek 8). While Kline and Clyne's work was revolutionary in refiguring the body and the possibilities it might have for interacting directly with artificial cybernetic systems, there was also a need to account for the differences occurring between humans and machines so as to not rely on an idea of universalized human experience. Early explorations into cybernetics such as in Stanley Kubrick's film version of *2001 a Space Odyssey* (1968) failed to do this; instead, they projected images of the technologically mediated distortion of the body and consciousness through technology.

Modern environmentalism also began to emerge in the 1960s, with Rachel Carson's *Silent Spring* (1962) calling for awareness of humanity's negative impact on the environment (Otto 1). Carson's much-cited text critiqued the use of sprayed insecticides like DDT and warned of their ecologically devastating effects on entire orders and interconnected chains of species, including humans. Carson's work was revolutionary and has held lasting influence. In the introduction to *Silent Spring*, Linda Lear argues that "Carson's concept of the ecology of the

human body was a major departure in our thinking about the relationship between humans and the natural environment” (vxi). Throughout *Silent Spring*, Carson weaves the idea that all life forms are connected and possess more commonalities than differences. While not connected with the cyborg in this initial stage, there is a marked growth in ecologically oriented texts that critique high technology in later decades such as in the ecofeminist works of the 1970s and 1980s by authors like Marge Piercy, Joan Slonczewski, and Ursula K. Le Guin.

Philip K. Dick’s *Do Androids Dream of Electric Sheep* (1968) merges the notion of ecological devastation with technology through his depictions of a polluted and contaminated future Earth where most creatures are extinct and many of the remaining humans are dying from a contaminating (and likely radioactive) dust. Like Carson’s cautionary parable²⁴, the extinctions do not immediately affect people but occur through subtle changes to the natural landscape. The reader learns that “first, strangely, the owls had died. . . . After the owls, of course, the other birds followed, but by then the mystery had been grasped and understood” (Dick 11-12). The remaining animals have been reduced to trading commodities for humans to demonstrate their proof of empathy in order to separate themselves from the androids/ “andys” that every off-earth human is permitted to own.

Unlike many previous cyborg works, Dick complicates the division between humans and robots. The androids possess human appearances, behaviour, and memories that render the division between them and humans indistinct, but they lack empathy. There are also ‘degenerate’ humans who are incapable of empathy but are still protected by the sheer fact they were born rather than made. John Isidore even mistakes a live cat for a malfunctioning robot and brings it

²⁴ *Silent Spring* opens with “A Fable for Tomorrow,” depicting the slow death of species and the sickening of humans in a once idyllic rural community after the spraying of DDT. The story ends with the revelation that “The people had done it to themselves” (3).

into the artificial pet repair centre, leading another employee to comment that “the fakes are beginning to be darn near real, what with those disease circuits they’re building into the new ones” (62). Despite working towards further blurring life with artificial life, Dick’s future society upholds the distinctions regarding humans as special and separate categories from androids.

Androids such as the Nexus-6 models challenge this distinction in that they sometimes do not even know they are androids because they have been given human memories (Dick 47). Rachel Rosen is one such example, discovering her true nature only after Deckard tests her. She is then informed by her uncle that she will not be “retired” because “you’re the property of the Rosen association” (Dick 47). Rachel not only learns she is not human; she now must cope with being reduced to corporate property. Contending that the androids are social and are only allowed to legally participate in the social realm as objects, Hayles suggests that “they are not objects improperly treated as if they were social beings but are social beings improperly treated as if they were objects” (169). In designating sentient androids as property, despite their all too human qualities, Dick’s novel returns to the ethics of the born versus made dichotomy and the way we construct machines with servitude in mind—a preoccupation that is later picked up by narratives such as Lai’s and Bacigalupi’s works in their exploration of the implications of cloning and the genetic modification of people. While *Do Androids Dream* repeatedly questions what parts of our identity make us human (McCarron 264), other authors will later shift away from that anthropocentric focus to explore how we determine the distinctions between human and nonhuman through cyborg nonhuman animal characters.

The conflict of feeling empathy for human life but not android life is further developed by Deckard’s feelings for Rachel. He willingly kills illegal androids for profit, but after sleeping with her, he tells her that: “Legally you’re not [alive]. But really you are. Biologically. You’re

not made out of transistorized circuits like a false animal, you're an organic entity" (Dick 155). The androids that Deckard kills are not what we would think of as true mechanical/robotic androids; they are likely cyborgian beings engineered from combinations of organic and synthetic tissue. Therefore, the real distinction is an invented legal one. While the androids clearly think and behave differently than humans, the big division is how they are constructed as legal property and objects to avoid emotional attachments to them. Dick's text thus queries the way capitalist markets and institutionalized biopower control and limit who and what is enfranchised as human. While written before cloning was scientifically possible, Dick articulates the blurring of identity categories and anticipates many of the situations in contemporary clone, cyborg, and robot narratives where individuals become objects of capitalist technoscience, exploitation, and disenfranchisement due to their status as made rather than born.

Anne McCaffery's *The Ship that Sang* (1971) further explores the line between physical and artificial and considers alternative modes of embodiment that de-anthropocentrize the human. While McCaffery's novel and James Tiptree Jr.'s *The Girl Who Was Plugged In* (1973) would both likely be criticized from a contemporary disability perspective, they should be recognized for their early consideration of the relationships between technology, embodiment, and the disabled body²⁵. In *The Ship that Sang*, Helva's status as a brain ship/shell person and the freedom and social mobility she attains through interfacing with her ship body present her augments as offering her experiences and abilities beyond what unaugmented humans could achieve, such as painting a copy of the Last Supper on the head of a screw (McCaffery 3). McCaffery resists favouring the human form over the embodied brain ships through her emphasis on Helva's emotions, choices, and abilities. This decentres the privileging of human

²⁵ The protagonist in *The Girl Who Was Plugged In* seeks to "transcend" herself for a different body. In many ways the text anticipates cyberpunk's capitalist consumerism and obsession with bodily transcendence.

embodiment, demonstrating that different forms of embodied experience should not be elevated over others. In doing so, McCaffery prefigures later feminist posthuman writers who emerge out of the second wave of cyberpunk and the 1990s embodiment feminist cyborg politics.

Returning to environmental concerns, the eco-feminist movement of the 1970s examined the ecological impacts of capitalism and technoscience. As an eco-feminist text, Marge Piercy's *Woman on the Edge of Time* (1976) continued Carson's legacy by pairing contemporary pollution and the mistreatment of the environment with the systemic social inequalities faced by women, people of colour, and the poor. Through Luciente, Connie is introduced to a possible future where all citizens are a "mixed bag of genes" (Piercy 100), the population is carefully controlled, and the citizens live on small settlements with careful consideration of their impact on the surrounding natural world—even having speakers for the animals and earth present at their town meetings. The politics reflected by the Mattapoissett community resonate with a transformative environmentalist/deep ecology position through their identification of anthropocentric instrumental reasoning as the driving force behind ecologically detrimental cultural and socioeconomic practices (Otto 40). Piercy's text critiques capitalist consumer habits and unsustainable uses of resources by illustrating an ecotopian community that maintains small, stable populations without a consumer-driven economic system and through environmentally sustainable technologies.

Mattapoissett artificially produces its children but not as a mass-produced form of labour. Instead, reproductive technology is presented as a way of removing gender inequalities while ensuring a stable—but not exploding—population. All children born in Mattapoissett are wanted and looked after, and parenthood—comprised of family units of three individuals who are not necessarily partnered with each other—is something one does because one enjoys it, not because

of an accidental pregnancy. While Connie is initially horrified at the artificial wombs and the fact that men are now able to breastfeed through the use of hormones, she is told that “as long as we [women] were biologically enchained we’d never be equal. And males never would be humanized to be loving and tender” (105). Thus, Piercy positions technologies of the body as possessing the potential to fight inequality rather than become its tools of oppression.

The depiction of technology in *Mattapoissett* is contrasted to Connie’s world and the other dystopic possible future she enters. Connie feels violated and helpless knowing that “they were going to stick a machine in her brain. She was the experiment. They would rape her body, her brain, her self” (279). She is made into a biopolitical object of the medical institution and her implants connect her to a future where institutional oppression has become the norm. In that future, she meets Gildina, a sex slave belonging to a soldier who has had his brain altered to turn off emotions like pain and fear (297-8). In Gildina’s world, most people have been replaced with artificially modified persons and fully robotized individuals who control all citizens (988) and treat the poor as walking organ factories (291). Everyone and everything is owned and exploited by a multinational corporation. Through carefully critiquing technoscience and institutionalized biopower, Piercy’s novel weaves together an ecological impulse with early feminist cyborg theory, one that neither unquestioningly embraces, nor fully rejects technology. Her later novel, *He, She, and It* (1991)²⁶ also imagines a polluted corporate-controlled future and the politics of technology and bodily agency, especially through the cyborg Yod. Piercy’s work is influential to later ecologically oriented posthuman texts such as Atwood’s *MaddAddam* trilogy in the ways that she critiques Western socioeconomic cultural and institutional practices regarding environments, people, and technologies.

²⁶ Published as *Body of Glass* outside the USA.

2.4 Digitalization and Cyberpunk in the 1980s-90s

For this section, I consider the 1980s and 1990s together because many of the texts and contributing influences I am discussing flow into each other in ways that are difficult to separate. This also enables more effective direct comparisons as many technologies—such as the Internet—had a great cultural impact. Writing on how the Internet and computers affected culture, Sherry Turkle states “in the story of constructing identity in the culture of simulation, experiences on the Internet figure prominently, but these experiences can only be understood as part of a larger cultural context. That context is the story of the eroding boundaries between the real and the virtual, the animate and the inanimate, the unitary and the multiple self” (10). Arguably, Turkle’s argument has gained greater accuracy with the increasing immersion in virtual and technological spaces; the computer has truly become an extended part of ourselves and we spend increasing amounts of our lives online. The Internet is also where programmers are attempting to create sentient AIs. Turkle recognizes we do not currently have the technology to create them but raises the point that “what seems most urgent now is not whether to call these machines or programs intelligent, but how to determine what rules of conduct to follow with them” (88). Her point recognizes the importance of considering how to interact with AI in a world where the lines between human and machine are becoming increasingly blurred.

Vernor Vinge’s work and the cyberpunk movement that followed were greatly influenced by postmodernism and its major features that included viewing late capitalism as a totalizing system, the fragmentation of the subject, and the virtuality of the real. Vinge’s *True Names* (1981) anticipated the significance of the Internet and presented a form of cyberspace in the virtual Outer Plane which blurred reality through the constructed identities of the players so that you do not know their real face, age, or appearance. Baudrillard’s *Simulacra and Simulation*

argues that in late-capitalist production and the era of virtuality, “illusion is no longer possible because the real is no longer possible” (19). Vinge draws on the postmodern obfuscation of ‘real’ and ‘virtual’ as well as conceptions of the multiple and fragmented self. This sense of twisted layers of reality is also already observable in texts such as *Do Androids Dream of Electric Sheep* where the virtuality occurs in the physical world through the replicants and robots that have become nearly indistinguishable from ‘real’ people and animals. What follow in the 1980s, especially in the cyberpunk movement, are general themes of replication, virtuality, and a blurring and questioning of real/authentic versus fake/reproduced.

It was during the 1980s that the aesthetic image of the cyborg we tend to associate with popular culture fully emerged. Cyberpunk transformed Vinge’s idea of “the Outer Plane” into Cyberspace, a place Gibson’s *Neuromancer* (1984) describes as “a consensual hallucination experienced daily by billions of legitimate operators” (51). Cyberspace is constructed as a fast-paced and potentially dangerous new frontier for “console cowboys” to “jack into” and perform their hacking, espionage, and programming of the abstracted data uploaded onto its matrix (51). Positioning his texts to reflect a subculture of technology, consumerism, and virtual identities, Gibson’s work embodies an aesthetic that draws heavily on postmodernist principles. Such qualities include instability and multiple, fragmentary subjects, and the ‘death’ or decentring of the autonomous individual ‘bourgeois’ subject (Jameson, *Postmodernism* 15). The postmodern decentring of the self becomes a major feature in later cyborg texts as the cyborg under Haraway is associated with the hybrid and multiple, rather than a unified whole²⁷.

Gibson’s *Sprawl* trilogy reflects a postmodern fragmentation of the self through its simulations of multiple identities. In *Neuromancer* this postmodern fragmentation is especially

²⁷ The computer age arguably exacerbates this ‘death’ of the liberal humanist subject through technology decentring the seeming uniqueness of human beings.

noticeable in the Cartesian split of the AI; *Neuromancer* is the “personality” side and *Wintermute* the “hive mind, decision maker...” (Gibson 269). Additionally, Gibson portrays characters whose enhancements echo a sort of Baudrillardian hyperreality as they blur life with death and reality with simulation. This reflects a shift in perceptions of science so that rather than reflect the real, cyberspace is recreated repeatedly from human perceptions (Dinello 36). Cyberculture also contains within it a sense of instability due to the necessity of capitalism to constantly transform those cybernetic products (19). Jameson even identifies cyberpunk as “the supreme *literary* expression if not of postmodernism, then of late capitalism itself” (*Postmodernism* 419). Cyberpunk dissolves the body and subject into an economy of consumption and production, often facilitated through technology.

While there is a multitude of cyberpunk texts from both the 1980s and 1990s, for the sake of brevity I will focus on a few texts that demonstrate significant contributions to the shaping of cyberpunk, the cyborg, and posthumanism. William Gibson’s *The Sprawl Trilogy* is considered one of the most iconic series for shaping cyberpunk as a genre and aesthetic. *Neuromancer* introduces readers to a world where implants, surgery, and cybernetic body modifications are not only normal but aestheticized as part of consumer culture. Anything from vat-grown eyes to grafted muscle, in addition to enhancements of the body, mind, or abilities related to cyberspace is for sale (Cavallero 14). This reflects the increasing attention to scientific advancements in biotechnology and criticism of the barriers in place for those who may not be able to afford them. While earlier science fiction tended to put the human at the forefront and technology in the background, cyberpunk differs through its “blurring of once clearly defined boundaries” and its highlighting of the way the human becomes mediated through machines (Hollinger, “Cyberpunk Deconstructions” 31). By troubling the real and the virtual and examining the way that bodies are

colonized and at risk of being subsumed into technology, cyberpunk certainly works such as Gibson's laid the groundwork for later posthuman explorations into the agencies of animal and machine agencies.

Cyberspace is commonly portrayed as a form of a future utopia that delivers a sense of exhilaration through transcendence and liberation from the material and embodied world into one where identities are self-constructed (Robbins 138). *Neuromancer's* Case models this in his favouring of the disembodied world of cyberspace over reality: "For Case, who'd lived for the bodiless exultation of cyberspace, it was the Fall. In the bars he'd frequented as a cowboy hotshot, the elite stance involved a certain relaxed contempt for the flesh. The body was meat. Case fell into the prison of his own flesh" (Gibson, *Neuromancer* 6). Throughout much of the text, Case desires to transcend his body and returns to it only it out of necessity, even though for others, such as his former friend Dixie Flatline, virtual freedom from the flesh means suffering as a ghostly copy of his personality and memories trapped without a body.

The general repression of the material body, as well as characters like Case who seek to transcend the body, are examples of how "cyberspace is the consummate world of the Cartesian dualist; in cyberspace, one is the mind, effortlessly moving beyond the limitations of the human body. In cyberpunk fiction, the prison of the 'meat' is left behind" (Vint, *Bodies of Tomorrow* 103-4). The Cartesian tension between mind and body is foregrounded in cyberpunk, where the disembodied experiences of cyberspace are held at a higher level than those of the meat/flesh. This tension becomes a transhumanist versus embodiment debate that spills over into the 1990s and continues to be a strong point of critical exploration in contemporary cyborgian and posthuman texts. Case's hatred of his flesh and the aestheticization of the modified body

exemplify core features of the cyberpunk subculture that became popular in the years to follow *Neuromancer*'s publication.

Cyberpunk also initiated a discussion on gender and technology, one that embodiment feminists in the 1990s brought to the forefront. Amanda Fernbach identifies the matrix as a feminized space, arguing that "The word 'matrix' originates in the Latin mater, meaning both 'mother' and 'womb'" (244). This gendering of cyberspace invites consideration of how cyberpunk protagonists have interacted with it. Nicola Nixon critiques Gibson and contemporaries such as Bruce Sterling and Walter Jon Williams for their hyper-masculine, individualistic console cowboys like Case, Jonny, and Gentry who must penetrate the feminized space of cyberspace and its programs' protective ICE or be rendered braindead (226). These masculine figures further align themselves with traditional Cartesian codes through favouring their minds over their bodies, often seeking liberation from their flesh for the freedom and expanded possibilities of cyberspace. Many women in cyberpunk have a very different relationship to cyberspace. Dinello observes that cyberpunk's approaches to gender have been ambiguous, often both subverting and reinforcing gendered stereotypes (121) Molly Millions, in particular, occupies an ambiguous space, mixing images of the tough femme fatale with a commodified prostitute and a woman powerless to escape the system that forces her to choose between those options. Nixon takes a firmer stance, arguing Molly is "effectively depoliticized and sapped of any revolutionary energy" (222). Similarly, Angie in *Count Zero* and *Mona Lisa Overdrive* appears to contribute to reaffirming the passive feminine connection to the world and nature-space, her brain having been patterned to grant her a direct connection to cyberspace. On the one hand, this reinforces a 'woman-nature' connection. On the other hand, the 'space' she is connecting to is cyberspace, not the often-feminized earth, complicating an essentialist reading.

In either case, the world Molly and Angie inhabit shares certain oppressive features with the dystopian future in *Woman on the Edge of Time*. Bodies are frequently broken down into their commodified parts throughout the text; instead of becoming improved or stronger, biotechnology shapes bodies as “dictated by ideological and economic imperatives” (Dinello 92). Molly’s femme fatale role embodies a particularly fetishized aesthetic with blades that emerge from under her nails and silver lenses implanted over her eyes (Gibson, *Neuromancer* 24-5). Cyberpunk explores the biopolitics of technoscience through the visible ways bodies and technology colonize and co-commodify each other—this also becomes a recurring preoccupation of posthuman fiction.

In the background of this shiny film of consumerism and implants, Gibson depicts a wasteland of slums, abandoned suburbs, and sprawling cities. Describing Gibson’s future setting, Dani Cavallero contends “cyberpunk presents a bleak vision of a future in which people are subjected to ruthless communications networks, are totally disconnected from one another and long to leave the body behind, yet are trapped in a physical maze of junk” (xv). These polluted landscapes forecast what capitalist techno-fetishization might engender in terms of day-to-day living: cyberspace, drugs, and “sim-stim” virtual reality programs become regular rituals of escapism for the populace. Connecting the environment to escapism in the *Sprawl* trilogy, Hayles argues that cyberspace creates a notion of pseudo-immortality:

In a world despoiled by overdevelopment, overpopulation, and time-release environmental poisons, it is comforting to think that physical forms can recover their pristine purity by being reconstituted as informational patterns in a multidimensional computer space. A cyberspace body, like a cyberspace landscape, is immune to blight and corruption. (138)

This certainly helps explain characters like Case's feelings towards their material bodies and their desire for escape in cyberspace. While frequently giving descriptions of polluted beaches, dead fish, and dirty cities, Gibson's texts do not heavily explore the environmental impacts on the ecosystems or the bodies of the people beyond the socioeconomic ones of his characters. However, these masses of "gomi" (detritus and debris) present in the series emphasize the materiality of the world, helping resist ultimate transcendence into a virtual space (Dinello 75-6).

Cyberpunk writers of the 1990s like Pat Cadigan and Melissa Scott were writing after the publication of Donna Haraway's monumental "Cyborg Manifesto" and publishing alongside a growing body of feminist embodiment theory and criticism. I have chosen to discuss Cadigan's *Synners* (1991) because of the many ways it opens a dialogue with Gibson's *Sprawl* trilogy through the feminist embodiment politics and cyborg identity present in its depictions of cyberspace, female protagonists, and the embracing of hybridity. Like the *Sprawl* trilogy, *Synners* is set in an exploitative system where marginalized women of colour like Gina and those living in the slums of the Mimosa Strip often find themselves the target of oppressive institutions, exploitative medical services, and law enforcement. *Synners* critically explores the technologization of bodies through surgery but not in the dramatic sense of Molly's razor blade nails and mirrored eyes. Instead, Cadigan focuses on big-money industries like entertainment and medicine. Illegally run feel-good mills offer implants and surgeries claiming to cure mental illnesses and the deadly virtual virus that emerges occurs as a result of a medical technology company partnering with the entertainment business to create minuscule living tissue implants that connect directly to the visual centre in the brain (Cadigan 69).

Like Gibson's Case/Molly pairing, Visual Mark prefers to live in the matrix of cyberspace rather than in his own flesh, while Gina favours the embodied route to producing the

videos they make. She even bungee jumps off a building so she can accurately feel the experience of freefall and put it into her videos (Cadigan 202). Mark, on the other hand, feels burdened by the limits of his body and seeks liberation from it. As soon as he has his implants, Mark begins to spend growing amounts of time in the virtual world and increasingly feels like:

He'd been holding back, keeping himself sized down enough to return to the meat, because he couldn't go back and be contained in the meat once he'd allowed himself to expand beyond a certain point. It was too defective, too worn-out and tired for him.

So, out the one-way door then. What did he have to lose? Only the meat, and he already knew that he didn't miss that. He didn't. He *wouldn't*. Even if the meat missed him. (Cadigan 253)

Mark's inability to bear his body is a direct contrast to Gina. She cannot bear to be separated from her material physicality which is amplified by her experiences as a woman of colour. Sabine Heuser states that Mark follows the model of Gibson's male cyber-heroes, feeling nothing but contempt for his 'meat' body and attempting to transcend it. However, this transcendence comes with a price; in this case, it is the stroke that kills his body and travels with him into the matrix as a destructive and highly infectious virus that disperses through the net, killing those connected to it by their sockets (158). Thus, Cadigan's text powerfully resists the fetishization of transcendence by having it come at a horrible price. The fluid transition of the physical stroke into a virtual virus also demonstrates similar fluid boundaries to those depicted later in Watts's *Rifters Trilogy* where the physical infection is also translated into a virtual form.

As I previously noted, much of cyberpunk in the 1980s was observed to embody a postmodern paranoia mixed with excessive consumerism of technology. Early cyberpunk texts like Gibson's centre on incorporation rather than embodiment (McCarron 270). Cadigan presents

more caution regarding the overconsumption and integration of technologies while lacking the dystopic paranoia of Gibson. Cadigan's politics regarding bodies and technologies situate her work amidst feminist scholarship emerging at the time, including embodiment theorists such as Elizabeth Grosz and Margrit Shildrick. In her critical examination of *Synners*, Anne Balsamo concludes it "offers an alternative vision of technological embodiment that is consistent with a gendered history of technology: where technology isn't the means of escape from or transcendence of the body, but rather the means of communication and connection with other bodies" (*Technologies* 155). This potential for communication and connection through embodied being and mediated via technology is one I intend to expand on further in later chapters where those connections are an integral part of becoming resituated within an ecological assemblage.

2.5 Cyborg and Embodiment Theory

In 1985, Donna Haraway published her influential "Manifesto for Cyborgs". Like first-generation cyberpunk, Haraway's manifesto dismissed liberal humanist dreams of unity and completion and, instead, obscured the distinctions between humans and machines (Hollinger "Retrofitting Frankenstein" 196). Adapting the word "cyborg" from Clynes and Kline, Haraway defines it as "a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction" ("Manifesto" 7). She goes on to define social reality as our lived interactions and relations, emphasizing the material conditions of the world, thus positioning the cyborg as straddling real and imagined potential.

While there is a tendency in science fiction to focus on cyborgs as a literal blending of machinery with human flesh—Gina, Case, and Helva being a few examples—Haraway argues that we are all cyborgs and "hybrids of machine and organism" (8). We are machines as a part of our embodied way of being and are actively able to participate in the construction of boundaries

we establish rather than being passively bound by former dualistic paradigms such as natural versus artificial or human versus machine (38). Haraway emphasizes negotiation and active construction in forming cyborg identities, stating that “the cyborg is a kind of disassembled and reassembled, postmodern collective and personal self. This is a self that feminists must code” (23). This urges the active deconstruction and reconfiguration of social reality through the subversion of the dominant relations grounding our readings of categories such as human, machine, animal, and organism (Balsamo, *Technologies* 33). These deconstructed and negotiated identity formations become foundational aspects of posthuman theory and its approaches to deconstructing anthropocentric modes of interacting with nonhuman animals and environments.

Centring her myth amidst the postmodern rejection of wholes, Haraway’s manifesto not only articulates the cyborg as a reflection of the partial, overlapping, and hybrid identities of women and people on the margins but also how those identities became increasingly interconnected with technology. The cyborg, therefore, “connects a discursive body with a historically material body by taking account of the ways in which the body is constructed within different social and cultural formations” (Balsamo 33). For critical posthumanists, one of the most significant things to emerge out of Haraway’s manifesto and later writings is that cyborg identities are partially about the mutual partnerships formed between humans, animals, and machines—bonds which may be contradictory, partial, and multiple (Haraway “Manifesto”13). The articulation of this form of cyborg body was of great importance at a time when the developments in biomedicine (such as the first intravenous/ ‘test-tube’ baby in 1978) were crossing seemingly established nature-culture boundaries.

Haraway’s essay navigates the biopolitics of late twentieth-century society and their intersections with gender, capital, and technoscience. Some of the more significant junctures of

her work include the way communication and digital technologies code specific realities for cultural consumption and the way women's bodies are increasingly being read as permeable and biotic components of science. "A Manifesto for Cyborgs" engages with the ongoing social complexities of who determines medical definitions of the boundaries of the body (28).

Discussing Haraway's figuring of bodies as "maps of power and identity" (38), Vint observes that they endow the cyborg with the potential to interrupt the systemic dualisms and hierarchies that have been used to dominate women, people of colour, animals, and those living on the margins (*Bodies of Tomorrow* 120). The cyborg body's disruptive potential is something developed further through my central texts engage with their genetically modified/designed and technologically augmented posthuman characters; Atwood and Lai, in particular, employ a feminist posthuman politics to critique biopolitical boundaries in their texts.

This is not to say that Haraway's construction of the liberatory figure of the cyborg is not without its problems. Haraway herself has recognized them as problematically born from militarism and patriarchal capitalism ("Manifesto" 10). As I have outlined in early examples, the cyborg is frequently troubled by gender. This is something Balsamo criticizes regarding the potential of the cyborg—especially the female cyborg—to act in a subversive and deconstructive role. She acknowledges that female cyborgs do more to challenge our cultural coding of masculine technology than male cyborgs but argues that they also continue harmful gender stereotypes ("Reading Cyborgs" 151). This presents the challenging position cyborg fiction and posthumanism occupy when navigating the already heavily coded assumptions and biopolitical forces acting on bodies. Posthuman theorists continue to struggle with the deeply coded intersections of gender and technology. Instead of embracing Haraway's vision of the cyborg, contemporary engagements with technology all too often demonstrate "an increasing tendency to

reduce humans to the object status of machines rather than to challenge the binaries that structure our subject/object distinctions” (Vint, *Bodies of Tomorrow* 121). Haraway has in more recent years distanced herself from cyborg politics, arguing instead for a politics of companion species that centres on our relationships with animal others and our embeddedness within nature. While I will be discussing her companion species politics in later chapters, it is worth noting that critical posthumanism builds upon features of both cyborg and companion species ethics.

While areas like robotics and the creation of AI still attempt to achieve lifelike machines, the advances of technoscience and biotechnologies associated with the cyborg reflect a paradigm more closely associated with Shelley and Wells in our becoming other. It is the potential of becoming something other than human that emphasizes the tension that critical posthumanism embodies in its resisting anthropocentrism while at the same time exploring what it means to embrace identities that are multiple, partial, and interfaced with animals, machines, and the environment. As cyborgs become more complex in their hybrid iterations—appearing sometimes as clones, cross-species or mixes of machine and flesh, or all of the above—they continue to offer a means of interrogating the intersections of identity, otherness, and the boundaries we create along lines of race, gender, and species.

Octavia E. Butler’s *Dawn* (1987) reflects this emerging discourse of the cyborg as a potential representation of the experiences of marginalized bodies. It also exposes the deeply rooted humanist prejudices we have against hybridity and those who appear as other to us. The tensions between Lilith’s bond to her ooloi partner Nikanj and her position as a displaced and conquered person are often illustrated through her attempts to cling to the parts of herself she identifies as most human and in the moments where she is encouraged to accept the changes the

Oankali deem necessary for humanity. These changes include the hybridization of their offspring, removal of hierarchical tendencies, and any beneficial genetic adaptations (40).

Consent becomes a substantial theme in the narrative, and while set in the future, the relationship between the uses of technologies and experimentation on colonized peoples at the hands of their conquerors (even when they come in the guise of saviours) clearly parallels historical attitudes and treatment of colonized peoples. Before Nikanj transitions to adulthood, it must prepare Lilith by ensuring she is fluent in the Oankali language. To do this, it must “make a change” to her to improve her memory by modifying her brain chemistry. Ignoring the advice of its ooloi parent to surprise Lilith and force it on her, Nikanj recognizes that doing so is wrong because it is treating people as if they are not people (O. Butler 77). Despite Nikanj giving Lilith a choice, the power between the humans and Ooloi is vastly unequal. Paul Youngquist argues that Lilith’s experiences, after all, closely parallel that of African slaves conquered, transplanted, and carefully bred by slave owners (165). Lilith frequently compares her treatment by the Oankali with animal experiences at the hands of humans, especially her near-rape by Paul Titus. While Lilith craved human contact out of missing her species, Paul and his Oankali family thought she “should have mated with him” (O. Butler 96), showing little consideration for her agency.

Through such encounters, Butler decentres the human by pushing it outside its own boundaries and into confrontational and painful interactions with both the alien other and the animal it has defined itself against. This occurs by layering the historical treatment of certain humans as animals transfigured into a future alien encounter narrative with humans being treated the way animals were so that breeding “was the art of sculpting flesh, animal eugenics with a happy face” (Youngquist 167). Youngquist argues that this produces a collapse between the

animal-human divide by producing bodies beyond both historical categories (164). This human-animal categorical collapse present in Butler's work is of great importance in contemporary posthumanist critique and fiction. This is reflected in a number of my focal texts where the bodies of women, especially women of colour like Bacigalupi's Emiko and Lai's Sonia and Miyako clones, are frequently put into categories of the animal

While Nikanj wanted Lilith's consent regarding altering her mind, she is given no choice when it decides to impregnate her (O. Butler 246). Lilith's response reflects the mixed horror, resentment, and fear of mixing humanity with something as other as the Oankali. She fears "It will be a thing—not human" (246). Her anxieties regarding the baby's humanness conflict with the changes the Oankali have made to her so that she is no longer perceived as human by her own kind (181). Lilith's genetically enhanced strength, memory, and the ability to open walls in the ship make considering whether she is human is "a reasonable question" (Youngquist 181). Her moral argument that being human is in one's deeds is undermined by her xenophobic fears of what her child will be like. In doing so, Butler's text embodies the multiple contradictions of posthuman and cyborg politics that one encounters when embracing change and the permeability of boundaries between self, other, and the human.

Youngquist argues that Butler's *Xenogenesis* series suggests that the only way into the future is to transfigure the human at the very level of the flesh but that it will come at the cost of culture (183-4). Butler presents change as a necessary price for survival (Scheer-Schäzler 319). Written at a time of great advances in biochemistry, especially in terms of reproductive and genetic advances, *Dawn* looks back into human history to perhaps reflect on our own attempts at creation. Youngquist suggests that "Butler views culture, and the human tendency to make it the condition of identity, as an obstacle to the kind of change she calls *Xenogenesis*" (184). Thus,

our potential to imagine and transfigure our species is limited by our concept of the human and the desire for reproducing the same—an obsession perhaps verified by our interest in the potentials of cloning. Like Butler, some contemporary authors such as Watts and Atwood also seem to suggest our survival may depend on changes to the species as a whole.

What comes across very clearly from Butler's work is how much the limits of our embodied flesh and the way we perceive other beings all impact our constructions of identity categories; the human is constructed as a category by pitting it against others. While I have already discussed some embodiment politics, I wish to address certain core theorists whose principles have significantly influenced critical posthumanism. The importance of embodiment theory to thinking through the hybridity of posthumanism is underscored by Barad who argues the importance of material discourse, stating "Material conditions matter, not because they 'support' particular discourses that are the actual generative factors in the formation of bodies, but rather because *matter comes to matter* through the iterative intra-activity of the world in its becoming" ("Posthumanist performativity" 140). Rather than privileging the mind over the body or seeing the body as purely a material object or discursive construct, embodiment theorists perceive materiality and bodies as being mutually constituted by culture and discourse as well as physical matter (Alaimo, "Trans-Corporeal" 243). By considering the interactions of different sorts of human and nonhuman bodies, embodiment feminism takes account of their constructedness and how they present an opportunity to reinscribe meaning.

How bodies navigate and are situated in space and "material reality" becomes an additional concern of embodiment and posthumanist theorists. An understanding of how one is situated is necessary in order to reimagine how one's body might be reinscribed/reoriented. According to Grosz, "If bodies are to be reconceived, not only must their *matter and form* be

rethought, but so too must their environment and *spacio-temporal location*” (*Space, Time* 84). Grosz articulates the significance of lived experiences for different types of bodies and the need to situate the body within its temporal and environmental context. Grosz’s consideration of the physical construction and embeddedness of bodies resonates with cyborg and posthuman theorists. One’s spacio-temporal orientation, i.e., material reality allows for different sorts of relations, including how we may articulate our own identities and how those identities are understood. For the posthuman, considering one’s situatedness enables an understanding of how bodies and identities are shaped not only through abstractions like discourse but also through the material circumstances and systems of relations within which that body/identity is understood.

It is important to address concerns of embodiment falling into a form of reductivism with a fixation purely on the flesh. However, the body is the interface for one’s experiences and, as Balsamo has argued, considerations of embodiment need not only be limited to its roots in physical reality: “If we think of the body not as a product, but rather as a process—and embodiment as an effect—we can begin to ask questions about the how the body is staged differently in different realities” (*Technologies* 131). Cyberspace and virtual experiences allow us to think of different ways the body is transformed by spaces (real or virtual). The constitution of a body as human or nonhuman is not a fixed space; it has shifted spatially and temporally and will continue to do so. Embodiment theory encouraged a rethinking of the interactions of technoscience and bodies. Ways of reading one’s corporeal boundaries and norms have been radically altered due to diseases/pandemics, reproductive technologies, and advances in cloning and transgenics. Considering how posthuman bodies may be situated in different realities will also be useful for addressing digital entities such as those that appear in Watts’s *Rifters Trilogy*.

N. Katherine Hayles's *How We Became Posthuman* (1999) positioned her as one of the major theorists who applied embodiment and corporeal theory to a posthuman politics, one which distinctly opposes transhumanist modes of thought. In her opening chapter, Hayles remarks on her initial disbelief that a respected computer scientist like Hans Moravec²⁸ could argue in *Mind Children* that the mind could—and would—eventually be able to be separated from its body. Moravec entertains the idea that we will eventually enter a “postbiological world” full of “self-improving, thinking machines” (5). Moravec's work demonstrates a problematic form of Cartesian liberal humanism by speculating that the “transmigration” of ourselves into machines will help ensure our progress and advancement into a “supercivilization, the synthesis of all solar system life, constantly improving and extending itself, spreading outward from the sun, converting nonlife into mind” (116). The colonialist techno-fetishization in Moravec's work is appalling in and of itself. Hayles notes that such discourse is neither new nor unique to Moravec, but that it does reflect a defining contemporary cultural belief that “information can circulate unchanged among different material substrates” (Hayles 1). What Hayles points to is the continued presence of the Cartesian and liberal humanist reduction of minds and bodies down to information, proliferated through the coding of the virtual world and the breakdown of bodies into pieces of code through the development of genetics. Hayles's politics and her critical evaluations of transhumanism's technotranscendent liberal humanist ideas continue to proliferate in technoscience and popular culture and are still a significant source for posthuman theory. Her concern regarding the reduction of bodies into information is of specific significance to my next chapter regarding biopolitics and the rendering of bodies into forms of biomedica.

²⁸ Moravec, Neil Bostrom, and Ray Kurzweil's work greatly contributed to the transhumanist movement and its ideals of achieving immortality through biotechnological modifications of the body. See the Transhumanist Association's declaration and “Frequently Asked Questions” section regarding genetics, extension of life, and humanity's rights to “technological self-determination.”

Additionally, Hayles's work makes an important distinction that one does not need to be a literal cyborg to be posthuman. Hayles suggests that based on advances in cognitive science and a-life, every human is already posthuman since "the defining characteristics involve the construction of subjectivity, not the presence of nonbiological components" (4). This approach to the posthuman presents a significant discursive intervention because it articulates posthumanism as a politics we are already a part of and can further embrace. Hayles is explicit that her goal is not to resurrect the liberal humanist subject but to consider how agency and choice might be expressed in a posthuman context, stating that:

if my nightmare is a culture inhabited by posthumans who regard their bodies as fashion accessories rather than the ground of being, my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival. (5)

Hayles specifically rejects the fetishization of the body under capitalism and the transhumanist goals of immortality that run deeply through cyborg fiction and, instead, opts for a materially embedded posthuman politics. In doing so Hayles implicitly grounds that material politics within the world, demanding that we recognize the material world as the source of life and reconsider how technologies and bodies interact with it. Later critical posthuman theorists like Alaimo, Barad, and Braidotti also embrace and engage with this materially grounded form of the posthuman, something I explore in greater detail in later chapters.

While Hayles's work centres largely on post/human embodiment and technologies such as AI and virtual reality, her project presents the potential for reorienting posthuman

understanding towards animal others as well. Thinking through embodied cognition requires consideration of material factors that may affect and shape different forms of cognition through their experiences of embodied reality. By doing so, debates about human versus animal intelligence have the potential to be recontextualized. Hayles's theoretical contributions provide a foundation for contemporary theorists to articulate non-human animal/posthuman interactions.

2.6 Contemporary Biotechnologies

Cloning and advances in transgenics have had a significant impact on the way the posthuman is conceived of and interpreted in literature and popular culture. While science fiction stories of clones and transgenic monsters existed well before the announcement of the successful birth of Dolly the sheep, they have certainly proliferated in the aftermath, including in the works of Lai and Bacigalupi. The birth of Dolly rewrote what was conceived of as possible in 1996 (MacKinnon 2). Dolly was one success of many attempts specifically performed by Ian Wilmut and Keith Campbell from techniques developed for the production of transgenic animals capable of producing drugs in their milk for the pharmaceutical industry (Seidel Jr. 32). Less than a year later in June 1997, the United States' National Bioethics Advisory Commission called for a moratorium on all efforts to clone a human being (MacKinnon 2). The fact that this change to the law happened so quickly after the initial and somewhat imperfect attempt to clone a sheep demonstrates the sheer impact and level of public and political concern that advances in cloning technologies generated.

The mapping of the human genome project and cases such as OncoMouse also sparked cultural anxieties that have significantly shaped science fiction—especially works such as Lai's *Salt Fish Girl* and Bacigalupi's *The Windup Girl* which extrapolate from the assumptions made in the outcome of the patent cases involving living beings. By 1994, the U.S. Food and Drug

Administration gave final approval to Calgene Inc. to sell the tomato it had genetically engineered to decay slower than non-altered varieties (Haraway, *Modest_Witness* 56).

Genetically modified foods and organic products now thrive in the contemporary consumer market. The dawn of biogenetic corporations also reflects what Haraway observes in the fact that the new world order includes species being created and having their genetic heritage trademarked and put to use in a series of industrial, military, and biomedical institutions (58-9).

Exploring the debates and legal battles over transgenic research and its products, Haraway observes how they have fallen into the traditional divisions of nature and culture (*Modest_Witness* 60). Haraway connects fears of transgenic “bordercrossing” to the argument that mixing genes somehow contaminates the “legitimate” material, thus taking away from the “natural integrity” of the original object (60). Acknowledging these discussions of contamination are situated within discourses and anxieties of xenophobia and racial prejudice, Haraway is also critical of the patenting of animals, human genes, and plant genetic material because they turn genes into tools of profit (62). Much like cyberpunk imagined the body as an object of capitalist profit, corporate genetic research transforms the body’s biochemical coding into patentable property.

OncoMouse became the first animal to be patented in the world in 1988 (Haraway, *Modest_Witness* 79). It was designed by Harvard’s medical school with breast cancer genes that caused it to produce tumours for scientific study. The case of OncoMouse presented multiple implications for the scientific world; it was the patenting of a lifeform that would be both a mouse and a product of technoscientific research, one which was incredibly lucrative for Harvard Medical. Furthermore, this was also a living being that was being used in a rather morally questionable way and being treated—like the many animal-objects of technoscience—as a

commodity and means to an end (82). The patent history of OncoMouse is complicated with the patent specifically excluding humans by specifying “for transgenic non-human mammals” (Leder and Stewart). However, as previous texts have demonstrated, the definition of human has been subject to change. EPO’s records of the case highlight the legal divisions between “naturally occurring” and “produced” that are both culturally inscribed onto and reaffirmed by such patents (“T 0019/90 (Onco-Mouse)”). While the patenting of “higher life forms” is illegal in Canada as of its 2002 decision (Ropp and Taubman), the definition of what constitutes a higher life form is remarkably open to interpretation, redefinition, and possible exploitation²⁹. These binary divisions of manufactured versus naturally occurring and higher versus lower life form reassert the problematic divisions of nature and culture. In fiction, Kazuo Ishiguro’s *Never Let Me Go* (2005) explores the dehumanization of human clone children raised as organ donors, while all my focal authors explore to varying extents the ramifications of genetic patenting across the boundaries of human, animal, and even plant.

Moreover, OncoMouse reveals a deep and complicated weighing of the “usefulness to human society” against the “animal’s suffering” (“T 0019/90 (Onco-Mouse)”). This problematically pits recognition of animal sentience and their capacity for pain against a quantified use-value for humanity. It is deeply entrenched in an anthropocentric world view (the emergence of which I have touched on previously) that perceives everything existing for human use/progress. This perspective reflects what Bruno Latour terms the “modern constitution,” where despite being set in a world of ever-increasing hybrids, we continue to maintain faith in the existence of pure categories (Blok and Jensen 55). Such distinctions perpetuate a human-

²⁹ A 2013 American Supreme Court decision ruled that isolated unmodified genes were products of nature. This decision did not extend to synthetic DNA molecules. See the NHGRI’s “Intellectual Property in Genomics.”

centredness of scientific research, one where animals regularly suffer for our benefits—something Atwood focuses on in the *MaddAddam Trilogy*.

The Human Genome Project concluded in 2003. On its webpage “All about the Human Genome,” the NIH refers to its project as having given “us the ability, for the first time, to read nature's complete genetic blueprint for building a human being.” The site regards the human genome project as a massive leap forward because it has finally discovered this “blueprint” for building a human—as if nature were some mysterious architect. Despite the anthropocentric interest of the project, it also uncovered just how much genetic material we share with non-human animals. While it is the individual codings and repeats of the genes that create the vast diversity of life on the planet, to share 85 % of our genome with mice (“Importance of Mouse Genome”), even OncoMouse, presents the potential for examining new potential forms of kinships. These largely anthropocentric projects have created ideal fictional spaces to explore the complex ethics of biogenetics as well as its effects on nature-culture boundaries.

2.7 Conclusion:

Jean Baudrillard relates the clone to the double and the annihilation of the self/subject (97). He characterizes the coding of the body as a dissolution of it into information, reflecting a concern for the erasure of the body that Hayles and other embodiment theorists aim to resist. Our erasure of the significance of bodies and matter is partly responsible for the conditions of the Anthropocene. Culturally, we tend to reduce bodies to information and data; OncoMouse and the Human Genome Project reflect this reduction and the complex mix of anxieties of degeneration, contamination, and hybridity that have spanned from the time of Wells into the present.

From the cyborg, critical posthumanism attempts to negotiate the recurring difficulties of identity, agency, hybridity, and gendered bodies, as well as how one mediates corporate science

and ecological responsibilities. This chapter has identified several threads that continue to weave through the cyborg's history into contemporary posthumanism. It is still haunted by Enlightenment humanist anthropocentrism and Cartesian dualist binaries; the images of posthuman bodies continue to be highly gendered and frequently connected to images of militarism or capitalist consumption of technologies, yet often in resistance to them. The texts of the post-millennium reflect their material foundations by reimagining Frankensteinian narratives, anxieties about technoscience, and the impulse to transcend the body. They query the impacts of technology on the world around us while exploring the potentials of enmeshed relationships between humanity and other nonhuman species. The posthuman cyborg is now situated in the Anthropocene, a period of mass extinctions, climate change, and oceans that will soon be limited in their abilities to support life unless significant interventions are made. As a symbol, it also reflects the integration and colonization of our bodies by technoscience and the ever-increasing preoccupation with the biological sciences enabled by genetic advances in cloning, genome mapping, and genetic modification. I contend that the mediation of the biological and technological offered by posthuman figures may help negotiate the challenges of our current reality by anchoring and resituating the human within the assemblage of the environment.

3 Hybridity, Contagion, and Containment: The Biopolitics of Posthuman Bodies

Regarding the importance of cultural and technoscientific representations, Elaine L. Graham contends that “representational practices serve not only to portray and report but to legitimate, to reproduce and to normalize; or to subvert, to contradict and destabilize” (26). There is a large body of work on how biopolitics and our perception of life, including human life, are changing due to advances in genetics, genomics, and biocomputing, especially when these technologies are harnessed by capitalism to produce and reproduce life for profit. Watts, Lai, Bacigalupi, and Atwood all imagine how this biopolitical shift results in the continuation of speciesism, as well as new forms of politically disempowered life that emerge through the creation of bodies for their use-value. In conjunction with the construction of posthuman subjects as labouring bodies and forms of bare life, two other major biopolitical themes emerge: contagion and containment. As the posthuman bodies in their texts are technologized bodies, I feel these themes are significant for characterizing the anxieties regarding posthuman subjects, the technologies transforming their bodies, and their proliferation in a global capitalist world as patented forms of biotechnology. Lai’s Sonia clones and Bacigalupi’s New People are marked by race and gender, injecting otherness into their narratives of containment and contagion. By tracing how these posthuman characters are biopolitically (re)produced and contained, one gains a new understanding of how biotechnologies and forms of biocapital are generating technoscientific anxieties. Their deterritorializations and reterritorializations of traditional divisions of human, animal, and machine also allow consideration of the potentialities of a non-anthropocentric and ecologically situated biopolitics.

Foucault’s introductions of the terms “biopolitics” and “biopower” emerge in his study of how identities are shaped by state institutions of power, particularly for capitalist purposes.

Biopower—the power over life—acts as a manager of bodies, their survival, and overall population, especially through institutions that regulate bodies, aiming to “optimize and multiply it [the body], subjecting it to precise controls and comprehensive regulations” (*History of Sexuality* 137). Tracing biopower’s development under capitalism, Foucault argues that it evolved into two forms with the first focusing on disciplining and regulating the body, “centred on the body as a machine” to function within capitalist systems of production and consumption(139). The second concentrates on regulating the population’s health and growth (139). Through these forms of biopower play out in all my focal texts through various institutional controls over bodies, especially in the case of control of reproductivity of genetically created lives such as New People in *The Windup Girl* and the clones in *Salt Fish Girl*. Additional controls over the body occur with the containment of diseased bodies, something that comes across strongly in all my texts through their depictions of the regulation of bodies and environments by technoscientific institutions.

Foucault’s later work in the “Birth of Biopolitics” expands on his earlier concepts of biopolitics through his theory of human capital, arguing that under liberalism, the worker’s aptitudes and abilities are a machine to generate capital which cannot be separated from the worker (224). According to Foucault, the control of risk takes on great biopolitical possibilities in the contemporary period due to the development of genetics that might enable one to identify “individuals at risk” (227) so that “the political problem of the age of genetics arises in terms of the formation, growth, accumulation, and improvement of human capital” (228). The modification of bodies to generate human capital is present in a number of my texts, especially in Watts’s and Bacigalupi’s futures. Several theorists including Giorgio Agamben and Donna Haraway have critiqued and expanded on Foucault’s concepts of biopolitics with Agamben

contributing the concept of bare life, describing those outside the law who are deemed killable/bodies without political status as a binary opposite for legal/political subjecthood to constitute itself. The possibility of this status is, according to Agamben, “the new political body of the West” (*Homo Sacer* 103). This concept of bare life will be particularly useful in providing an understanding of how biopolitics is structured in my core texts, especially concerning produced, modified, and nonhuman bodies.

Biotechnology has greatly affected Western politics, something all of my texts illustrate in their depictions of life being fragmented and separated from its embodied context through reducing it to the gene and its basic components. This becomes a central difference between Foucault’s biopower and contemporary scientific thought, where rather than being human-centred, biopower now emphasizes “the mutual interdependence of material and symbolic forces in the making of social and political practices,” thus shifting modes of interactions to “‘hybrid’ social identities and modes of multiple belonging” (Braidotti, “Transposing Life” 3). The hybrid interactions of contemporary biopower characterize what Eugene Thacker has termed “biomedia” as an “instance in which biological components and processes are technically recontextualized in ways that may be biological or nonbiological” (5-6). As biomedia, the emphasis is on “what can a body do?” (6). This notable erasure of the threshold between the body and technology as well as the body’s instrumentalization frames the way our understanding of the body is being transformed by data technologies.

Bioinformatics has created a complicated situation where, rather than seeing the machine as opposed to the human or as a conflict of artificial and natural, biomedia is interested in “a particular instance in which the ‘bio’ is transformatively mediated by the ‘tech’ so that the ‘bio’ re-emerges more fully biological” (Thacker 6). While complex, this relationship is an ambivalent

one with the goal, according to Thacker, being to supplement the already biological body through technology. In this sense, one's abilities might be separated, supplemented, and even reproduced as a form of genetic currency. Writing during the rise of biocomputing and genetic mapping, Watts, Lai, Bacigalupi, and Atwood all engage with the ambivalent nature of the genetic modification of lifeforms. In this ambivalence lies the crux of how biopower is shifting and establishing new norms where bodies are routinely reduced and quantified as forms of biodata that may be both beneficial and exploitative, something which my focal texts explore through approaches that consider the bodies of humans, animals, plants, and even digital entities.

In *Biomedica*, Thacker suggests that as the body is “simultaneously framed by sets of knowledge on the body, including medicine and science, the incommensurability between these—between embodiment and technoscience—is perhaps the zone of the body-as-media” (10). In this zone, new means of controlling and redesigning the body through technology become possible so that while remaining biological, the body is transformed and remediated, often in ways of enhancing its perceived usefulness. In the twenty-first century, the question of what a body can do becomes an exploration of new ways it can be engineered to fit within capitalist systems of (re)production where “The self-replication vitality of living matter is targeted for consumption and commercial exploitation” (Braidotti, “Feminist Epistemology” 70). As the body is mediated and reformatted, its bio-data and processes become different products that complicate the nature-culture binary as the human joins the seemingly distinct categories of animal and machine together as forms of property and consumable products while also forming new hybrid ruptures of resistance. My focal texts all vary in their degrees of concern of the body reduced to bare life and in their depictions of alternate embodied approaches that resist biopolitical forms of containment. As a result, they portray various oppressive constraints placed

on bodies reduced to bio-data as well as the ambiguous potential opened by recombining the bodies of humans, animals, and machines.

3.1 Peter Watts's *Rifters Trilogy*: Just What Can Posthuman Bodies Do?

In Peter Watts's *Rifters Trilogy*, the ways that containment, infections, and the roles of posthuman beings are depicted reveal many of the biopolitical tensions of bodies, exploitative technoscience. They also model a boundary of the body similar to Roberto Esposito's description of the body as "the liminal zone where the immunitary intention of politics is carried out" ("Biopolitics" 318). The containment biopolitics exposed by the labour practices employed to create rifters, smart gels, and CSIRA lawbreakers such as Achilles Desjardins³⁰, as well as the more virulent strains of β ehemoth, " β -Max," and the engineered competitor "Seppuku" exemplify the dystopic turn that Watts imagines the management of populations and public health could take socially and ecologically in a future where climate change has acted as the catalyst for many of the technological interventions in the first place. Yet, Watts also resists fantasies of anthropocentric control over both physical and virtual forms of life by complicating traditional definitions of life and body, thus undermining and destabilizing corporate control and objectification of them.

Lenie has significant alterations made to her body by the NA'M PAC Grid Authority (GA)³¹ in order to maintain a geothermal power station in the Channer Vent. Her modifications include augmenting her genetically, mechanically, and biochemically to allow survival and communication in the high-pressure aquatic environment. The augmentations transform the

³⁰ The Complex Systems Instability-Response Authority or "Entropy Patrol" is a powerful international intelligence organization responsible for monitoring and containing elements such as disease outbreaks or disasters within the natural world as well as those occurring virtually. Their specially modified agents are called lawbreakers.

³¹ North American Pacific Grid Authority, typically shortened to GA in the trilogy.

rifters into cyborgian being who can survive in an environment inhospitable to most lifeforms, but the biotechnology is proprietary, meaning the GA gains considerable biopolitical control over their bodies. For example, due to a higher-than-expected loss of rifter human capital to the rift's environment, a "deadman switch" is assigned to each crew member to implant into their wetware that will broadcast a loud signal when one of them dies (105). Along with other sources of surveillance, such internal devices also provide data for the GA to analyze the success of their program and make future improvements such as potentially implementing the forceful "hypothalamic rewiring" suggested by Dr. Yves Scanlon to ensure the rifters adhere to his prescribed routines and schedules (170).

Yves's suggestion offers an example of what medical ethicist Donna Dickenson argues is a new form of property regime "dominated by 'biocapital'" and "situated within a global 'bioeconomy'" (2). Under this bioeconomy, the management of rifter bodies challenges bodily agency in the fact that the body no longer solely belongs to the subject; instead, rifters are a hybrid of patented property at the genetic, technological, and potentially even cellular levels. This loss of sole 'body ownership' can be read as a form of biopolitical capital akin to Braidotti's argument that the biopolitical economy has evolved so that "Genes are capital" and the global economy is ruled by the biogenetic commodification of nature ("Transposing Life" 65). The rifters' bodies are commodified through patented biotechnologies and genetic modifications that complicate their bodily autonomy. Like the case of Oncomouse, rifters like Lenie inhabit an indeterminate space where "The Grid Authority never claimed to own the bodies of their employees, not officially at least. They owned everything they put inside them though" (Watts, *β-Max* 198). Considering the modifications given to rifters, one is left to wonder: at what point does the GA's claim to Lenie's end and her own body begin?

Regarding the body as biomedica, Thacker argues that it is always understood in two ways, “as a biological body, a biomolecular body, a species body, a patient body, and as a body that is ‘compiled’ through modes of visualization, modeling, data extraction and *in silico* simulation” (13). The body thus becomes dispersed through the multiple technologized levels by which it is read. In the *Rifters Trilogy*, the entire GA experimental program constructs Lenie’s body as biomedica by resituating it at the physical, social, biological, and psychological levels, making it difficult to determine at times which forces have resulted in the production of her as a subject. In *Starfish*, readers learn that Lenie is a survivor of repeated childhood sexual assault; however, it is later revealed that her memories are themselves falsified and implanted, a horrific and unethical psychological rape performed upon her by the GA medical staff to make her more psychologically suited to the high-stress environment (*Maelstrom* 333). Both her body and memories are not exclusively ‘hers;’ parts of her very subjectivity are also a spliced-in piece of GA fabrication to transform her body and mind into one which can withstand and adapt to the high-pressure environment. While Thacker argued the central focus of biomedica is “what can a body do?”, the GA project instead asks: what can a body be re-coded to do in a high-stress environment? The GA wants the most productive bodies for its project; for them, their bio-, psycho-, and mechanical engineering of rifters is done to optimize their bodies—and minds—to be productive and successful in the deep-ocean environment as forms of (post)human capital.

Watts’s trilogy also imagines how the active construction of posthuman bodies and subjectivities become entangled in twenty-first-century globalized corporate powers. Michael Hardt and Antonio Negri’s biopolitical project builds on Foucault’s by arguing that contemporary multi-national capitalism reflects a form of empire rather than sovereign nation-state powers like those imagined by Foucault. CSIRA’s near-global techno-presence in the

Rifters Trilogy is an excellent example of a multinational powerhouse. Hardt and Negri argue in *Empire* that corporate powers biopolitically produce “not only commodities but subjectivities” so that they engineer productive subjects who will act as producers for them (32). The GA’s experiments to create ideal labourers for their deep ocean generator plants can be read as a form of biopolitically produced subjectivities specifically created to survive and be a productive worker in the rift environment. Watts’s narrative critiques how technoscience may be harnessed by global capitalism to produce even more specific bodies and subjects and to specifically reproduce certain types of bodies that dissolve the traditional divisions by which they are classified such as human/nonhuman or human/machine.

The power of global techno-powers to network and constrain bodies is further attested to by lawbreakers such as Achilles. Lawbreakers are cyborged agents with very select adaptive skills including implanted inlays that allow them to connect directly into Maelstrom and facilitate the analysis of vast amounts of surveillance data³². Lawbreakers, however, are also fitted with their own retroviral cocktails of chemicals to ensure loyalty and productivity³³: “Guilt Trip kept you from making the wrong decision, and Absolution let you live with yourself after making the right one” (Watts, *Maelstrom* 122). Globally, the chaos from climate change, pollution, disease, rioting, and outbreaks of experimental lab ‘tweaked’ bugs result in the engineering of people to make choices that include having to kill others for the ‘greater good’ of maintaining some form of socio-political order.

Both the lawbreakers and rifters demonstrate how non-normative personalities and bodies are needed for productive labour in an alien, inhuman environment, or digital storm of information. The bodies of rifters, as previously mentioned, are produced through blending

³² Maelstrom is the future evolution of the internet in *Watts’s* trilogy, named so for its chaotic virtual expanse.

³³ Guilt Trip and Absolution are the retrovirals used to ensure Lawbreaker corporate loyalty.

technology and genetics with their biology, with the minds of rifters being a complex mix of lived experience, implanted memory, and adaptation to the rift³⁴. Critically developing Thacker's suggestion of biomedica in a posthuman politics, Nayar suggests that biomedica look to the "informatization of life" where one's body is reduced to digitized numerical information "that can then be stored, retrieved and reconstituted across terminals, screens and interfaces" (57). He further contends that this correlation reconfigures the human body so that the body and dataset attached to it are inseparable (85). This leads to the body being seen as equivalent and interchangeable with its quantified form.

In the case of the rifters, Lenie's body became a dataset when she entered the program. As CSIRA's biocontainment specialist, Achilles is tasked by the GA to try to contain behemoth and any vectors like Lenie. In the process, he discovers that her memories of childhood abuse were entirely falsified by the GA because it was easier to turn a well-adapted person into an antisocial personality through implanted traumatic memories than to train existing ones (Watts, *Maelstrom* 334). When Achilles rebukes Dr. Patricia Rowan for the unethical and inhumane actions of the GA, she justifies them by saying, "Do you know what it is, to be fucked in the head? . . . It means a proliferation of certain receptor sites and stress hormones. It means triggers set at increased firing thresholds. It's *chemistry*, Doctor, and when you believe you've been abused . . . you can survive things that would leave the rest of us pissing in our boots" (335). Dr. Rowan's argument is an example of the technoscientifically driven biopolitical dissolution of bodies into biomedica, transforming them into data so they can be reconfigured into chemicals and "increased firing thresholds". By reducing the body, brain, and subject to a functioning mass of interacting chemicals and tissues, she attempts to absolve herself of wrongdoing by portraying

³⁴ The majority of rifters are either those who were victims of serious psychological trauma or those who were given memories to make them believe they experienced abuse or trauma.

the memory altering procedure as merely recoding something that already existed to produce a subject that can do things it could not effectively do before—in this case: survive.

Discussing Watts's *Starfish*, Wall argues that the rifters present a space for more fluid subjectivities but one that is at risk of being recolonized by the GA's authoritative practices through figures such as Yves Scanlon (Wall 72). Dr. Scanlon is a psychologist directly involved in the recruitment and training of the Rifters. He considers himself a "mechanic" and that rifters are "*machines like everyone else. They just need more of a tune-up*" (Watts, *Starfish* 171). Dr. Scanlon's thoughts about the rifters can be read as a form of the mechanistic and reductive biopolitical view of life rendered biomedica and possess an implicit anthropocentric mastery in the assumption that you can deconstruct and rebuild a sentient life form to achieve "something bent, not broken. Something that fits into cracks too twisted for the rest of us" (171). Drs. Scanlon's and Rowan's technoscientific perspectives objectify the human body, reducing it to a medically rendered commodity and quantified data.

While Lenie is an example of one whose subjectivity and body were altered to make her suitable for the GA project, others such as Gerry Fischer demonstrate how the GA takes advantage of undesirable persons such as pedophiles like him and makes them 'useful' labouring bodies. Scanlon specifically seeks out Gerry and arranges to have his criminal charges dropped in exchange for his participation in the rifter project (Watts, *Starfish* 59). Under globalized powers, subjects are increasingly made to be both "producers and products" according to Hardt and Negri (*Empire* 385). Through the GA's medical procedures, Gerry is (re)produced into a 'productive member of society'. The public versus corporate reactions to the GA's project is later recalled by Achilles a few months after the events of *Starfish* where a journalist whistleblower's report resulted in "the usual squeals of public out-rage, everything from *how dare you*

exploit society's victims for the sake of a few megawatts to how dare you turn the power grid over to a bunch of psychos and post-trauma head-cases" (*Maelstrom* 58). Between the corporate censorship to conceal what the GA had done to the rifters and the public reception that marginalizes them, rifters are doubly positioned outside the norms of society. They never find proper trust from "drybacks,"³⁵ even later in the Atlantis settlement comprised of both surviving rifters and refugee corpses³⁶ fleeing the plague and social chaos. Rifter outsider status leaves them vulnerable to exploitation by the GA so that individuals like Gerry are driven into the rift to escape repeated violence from coworkers rather than return to the surface (*Starfish* 95).

The bleak future in Watts's narrative and the creation of the rifters reflects a *laissez-faire* anthropocentric attitude of mastery of 'nature' and the environment. Beebe station embodies a new frontier of colonization where natural processes are opened to commercial interests and potential industrial use. Nature becomes what Thomas Lemke terms "a part of economic discourse" (70). It matters little what ecologies are destroyed for the sake of the GA's invasion. The GA's focus is to capitalize on the geothermal energy of the vents in a 'green' move for profit and to meet energy demands; they care very little for the way that the oceanic creatures' lives are disturbed by the presence of the rifters or their station technology because the local species of gigantic fish and other ocean life are not perceived as valuable commodities. In contrast, the trained and physically "tweaked" military dolphins that Ken Lubin and his covert operative contacts use to attempt to hunt down Lenie later in *Maelstrom* are valuable and also likely patented due to their modified brains and the embedded tech in their fins (310). Unlike the gigantic deep-sea creatures of the rift surrounding Beebe, the dolphins are also a productive unit.

³⁵ A "dryback" is what rifters call those who live exclusively on the surface.

³⁶ A corpse is the term Watts coins for Corporate Executive. Much like Atwood's CorpSEcorps, it aptly emphasizes the necropolitical connections between death, capitalism, and corporate power.

In *Animal Capital*, Nicole Shukin argues that “it is the capacity of animal life to be taken both literally and figuratively, as a material and symbolic resource of the nation, that constitutes its fetishistic potency” (6). No longer simply bottle-nosed dolphins, Watts’s dolphins’ modifications have made them a military resource that is both an effective aquatic surveillance unit and an attacker that never sleeps (Watts, *Maelstrom* 317). Like the rifters, the dolphins have become instrumentalized forms of life modified for military purposes and maximum labour potential.

This instrumentalized treatment of life is not exclusive to the oceanic creatures. One later learns that even the original bacterial form of β ehemoth which Lenie spreads across North America was genetically “tweaked,” not as a bioweapon, but for commercial applications with the unintended consequence of it becoming a threat to the biosphere once released from the rift (*β -Max* 232). The fact that the corpses responsible for the tweaking of the archaeobacteria into β ehemoth did so for economic means without contemplating the potential long-term consequences of their actions emphasizes the underlying anthropocentric relations largely informing human interactions with the world. The fact that they left the tweaked strain of β ehemoth in the rift area as if it had always been there also shows an extreme lack of responsibility. Vandana Shiva identifies forms of corporate irresponsibility as a core problem of capitalist biopolitics where corporate scientific institutions exploitatively make divisions between natural and artificial based on their own convenience so that they may profit off property rights to lifeforms they argue are “novel, not occurring in nature,” but then argue their genetically modified organisms are natural when faced with the consequences of them being released onto the environment (22). While Lenie’s intentional spreading of β ehemoth across North America certainly demonstrates an abject lack of respect for the biosphere, it would not

have been possible in the first place had both she and Behemoth not become objects of technoscientific experimentation in the first place.

3.1.1 Shirking Containment: The Threat of “Leaky” Bodies

Watts’s trilogy also offers a powerful examination of how those same forces of biopolitical production that shape posthuman bodies are also part of the disciplinary and regulatory bodies that have evolved into a normalizing power beyond Foucault’s “power to appraise and hierarchize” (*History of Sexuality* 144). The destructive efforts to contain the spread of Behemoth include nuking of the area around Beebe station causing a 9.5 magnitude quake that is followed by a tidal wave that hits Vancouver and its heavily populated refugee strip (Watts, *Starfish* 301). These destructive acts and the later incendiary containment practices *Maelstrom* and *Seppuku* are informed by already institutionally normalized forms of power that manage life by viewing it as pure risk and outcome calculations. Here, Agamben’s understanding of contemporary biopower is helpful in its concept of “bare life”. Rooting his theory in Aristotle’s original divisions of life, Agamben characterizes biopolitics as dictating two forms of life: *bios*/political life and *zōē*/natural life. *Bios* is the politically enfranchised life, while *zōē* is life at its base biological existence or “bare life” which is excluded from political enfranchisement. Agamben argues that the traditionally creaturely life/ *zōē* /bare life becomes the central foundation for state power and governance (*Homo Sacer* 106). In his later work in *The Use of Bodies*, Agamben contends that Aristotle’s divisions of life have allowed for life to be constructed in terms of binaries so that *zōē* must be excluded and divided off as the “foundation” and opposite of *bios* (202). Bare life is associated with the figure of *homo sacer*/sacred man whose life can be killed without consequence (70-71). Bare life exists in the lives of refugees, the permanently comatose, and, in Agamben’s most detailed example, the Holocaust, where he

connects *homo sacer*³⁷ with Jews and other groups excluded from political and social enfranchisement. Those excluded groups were killed by Nazis purely in their ability to be killed (95-6). For Agamben, governing power's central goal is to produce bare life and make it a part of every individual's body so that it is "what is at stake in a political conflict" (103). Bare life thus extends to those who are excluded from a position of valued life and exist as a category of life that can be disposed of and deemed killable.

In Watts's posthuman future, human lives—especially those deemed a threat or of little use—are reduced to bare life and reflect a dangerous political norm that envelops entire communities of people as burns/militarized incinerations are slowly performed across North America in an attempt to contain the infection. The normalization of containment practices in the name of preserving "valued" life has escalated in the *Rifters Trilogy* to such an extreme that the protocols to sustain/preserve life have enabled situations of mass slaughter. Engineered infections regularly cause urban outbreaks (*Maelstrom* 64), leading to CSIRA enforcing powerful containment measures. Climate change has created large populations of refugees fleeing ecologically damaged areas. These refugees are now permanently left in isolated camps along the coast, regularly surveyed by drones, and given food laced with drugs to keep them pacified (147). When Lenie spreads β ehemoth to the coastal refugee camps and it begins to make them immune to the drugs, CSIRA's solution is to bring in armed helicopters/lifters and containment walls and do a burn of the contaminated areas of the coastal refugee strips (166-7). The state and treatment of the refugees constitute a form of bare life akin to those identified by Agamben in that they are exempted from political enfranchisement and may at any moment be

³⁷ Agamben critiques Foucault for failing to connect the transformation of biopolitics in the modern era with the rise of totalitarianism and the atrocities that occurred in the early half of the twentieth century (*Homo Sacer* 99). While Agamben agrees that biopolitics is at the heart of society, he argues that the most important point worth interrogating regarding biopolitics often goes unexplored: our conception of biological life (*Use of Bodies* 209-210).

deemed killable. The euphemistic quality of the term “burn” masks the horror of the flame throwers and other weapons which cleanse the area right down to the level of the soil.

As a CSIRA lawbreaker tasked with these containment practices, Achilles is aware that “Every quarantine he invoked trapped the living alongside the dying . . .” but, due to the biological modifications of Guilt Trip and Absolution, he perceives it as part of his duty to “preserve life” and that that “he’d never *really* killed anyone. He’d just—contained them, to save others” (Watts, *Malestrom* 103). The euphemistic replacement of “killed” with “contained” is quite demonstrative of the bare life status of the people he kills in the refugee camp burns and other containment zones. One might assume that there would be a fierce public outcry to the measures imposed in Watts’s imagined future, however, as *Maelstrom* foregrounds, there seem to be few limits to the rights and freedoms people will relinquish in order to guarantee security—one of the very foundations of the corporate compounds in Lai’s and Atwood’s narratives. Through Achilles’s reflections on the designation of containment decisions to “non-human agents,” one also learns that “Humans had stopped complaining about such extreme measures right after the '38 enceph pandemic” (49). This lack of resistance implies that the growing disasters have resulted in bare life produced in every individual so that “it all dwells in the biological body of every living being” (Agamben, *Homo Sacer* 116). In Watts’s envisioned circumstances of the behemoth pandemic, anyone is killable if it is deemed for the political greater good and preservation of life.

The relationship in Watts’s trilogy between the public acceptance of such extreme containment measures and the potential losses of life to guarantee greater community safety can further be read in terms of Roberto Esposito’s concepts of community—that which connects one to others—and immunity, which “alludes to a temporary or definitive exemption on the part of

the subject with regard to concrete obligations or responsibilities that under normal circumstances would bind one to others” (Esposito, *Bíos* 45). In other words, immunity allows one to be exempt from the communal obligations of community. Esposito’s central argument in *Bíos* is that “only when biopolitics is linked conceptually to the immunitary dynamic of the negative protection of life does biopolitics reveal its specifically modern genesis” (9). The modern political concepts “security, property, and freedom can be understood only within a logic of immunity” (Lemke 89). This immunitary logic has interesting applications both for lawbreakers, such as Achilles, who are programmed with exemptions from community ties to the point that they can facilitate community destruction, as well as for the legal system in place which allows the community to be immunized against outsiders, diseases, and other threats through deadly and extreme actions.

Achilles’s knowledge in *Maelstrom* reveals a further hidden level of containment that underscores the thanatopolitical shape of Watts’s future North American society through rumours of “the *next logical step*” (103). Such a step is a form of survival through destroying bare life. The dissonance between Achilles’s “logical step” and the horror of it to readers further emphasizes the totalization of bare life in his society. While immunity grants “the power to preserve life” (Esposito, *Bíos* 46), it can also result in its negation; when it “assumes an exclusive and excluding shape with respect to any environmental and human otherness, it ends up contradicting the development of life” (“Community, Immunity, Biopolitics”). For Esposito, immunity taken to extreme results in deeply destructive acts in the name of preserving life by reducing and negating life processes to a purely biological existence (Lemke 90). Through characters like Dr. Rowan and Achilles, one comes to see efforts to contain the spread of the infections descend into thanatopolitical levels of destruction. Achilles’s next “logical step” is

algorithmically predicted burns done in advance of potential disease outbreaks or disasters so that if one occurred “Dicksville, Arkansas, would tragically drop off the map” (103). In other words, a still healthy community would be obliterated to save other communities based on risk statistics. In the case of *Behemoth*, this immunitarian tension is heightened to an extreme due to the stakes being the state of the biosphere so that millions, potentially even billions will be discarded to ensure some greater level of preservation. Timothy Campbell argues that destructive immunitarian politics contextualize the ongoing battle between security and freedom where attacks on liberties are justified at the level of national security, closing off the community for the sake of its immunity/protection (xli). Such politics are present in the partitioning of the North American internet and Achilles’s own rise to power to gain control over North America and its surveillance and containment systems as he increasingly adds to the devastation trying to prevent *Seppuku* from taking hold because its success would weaken his control (*Seppuku* 211). The biopolitical relationship between community and immunity informs an understanding of the layers of meaning that infection/threat and containment take on in Watts’s narrative in terms of why civil liberties have been so readily forfeited after previous disease outbreaks and environmental catastrophes. While they have been deemed necessary to maximize human survival, they quickly become open to exploitation and thanatopolitical devastation.

Human, animal, and all other forms of life are reduced to a basic biological level during such extreme protections against potential threats to the community, a tactic the *Rifters Trilogy* further depicts in *Starfish* through the reduction of all life on earth to a data packet called “*biosphere*” and given to a smart gel tasked to contain *Behemoth*’s bacterial spread (274)³⁸. Given the choice between the more complex metasystem and the simpler, more efficient

³⁸ Smart gels are organic neural nets made from cultured brain cells.

“*behemoth*” data package representing the bacteria, it chooses to protect and immunize *behemoth* because, of the two metasystems, it finds *biosphere* to have “trillions of redundancies, an endless wasteful divergence of information strings” (274). With no concept of the life that all that data represents, the biosphere’s complexities are reduced to ‘bare data’ so that the gel chooses to protect the “simpler and more efficient system” i.e., *behemoth* (274).

The gel is itself a form of odd bare life; smart gels are sentient neural cultures that are denied subjecthood as they lack the brain structures for pain, emotions, or a desire for self-preservation and, thus, possess no rights to protect (Watts, *Starfish* 155). The use of gels to monitor human activities and make life or death decisions, such as the gel Dr. Rowan puts in charge of containing *behemoth*, extends the concepts of bare life and immunization into territory that intersects with Thacker’s biomedica in the sense that technological and biological are no longer perceived as distinct. However, in the case of *Starfish*, this ambivalent enhancement of the biological in bodies through technology has led to a reduction in their value. Bodies are everywhere, replaceable, quantifiable, and alterable. The bare life status of these bodies is also inherently ambivalent; on the one hand, it is incredibly dehumanizing, on the other, reducing the human body to a base biological mass through digitization renders it on the same plane as all other biological forms of life: “No objects, spaces, or bodies are sacred in themselves; any component can be interfaced with any other if the proper standard, the proper code, can be constructed for processing signals in a common language” (Haraway, “Manifesto” 22). In the *Rifters Trilogy*, humanity becomes encoded as part of *biosphere*’s metasystem data, meaning that it is considered on the same level as all other life. The reduction of life to the data packets given to the gel means that it concludes that *biosphere* and *behemoth* are equivalent data systems.

In Watts's depiction of the transformation of the biological into biomedica, the very language used by those charged with containment reflects the deanthropocentrized side of biopolitics—the bare life where people, animals, and ecological systems are all filtered through technology and human reasoning into base biomass. For Thacker and posthumanist theorists like Rosi Braidotti, this is not necessarily a negative thing, and even in Esposito's work, immunitary biopolitics does not need to equate to a thanatopolitical outcome and may even result in a vulnerable and open community. In the case of Watts's narrative, integrating with technology has generated new norms by which the body is perceived as equivalent to its technological quantifications; it has been reduced not just to bare biomass but pure bio-data, resulting in the strongly thanatopolitical immunitary response in the name of containment. Out of fairness, the immunity response is deemed necessary to contain β ehemoth and the gel is put in charge to guarantee the decisions are made by a “completely disinterested party” (Watts, *Starfish* 266). However, it was not expected that the gel would choose to favour β ehemoth.

This immunitary reduction to bare life is also demonstrated through the language used to draw boundaries around those deemed infected whereby individual bodies are transformed into objects of knowledge as infected bodies. As one attempting to maintain a form of sovereign power over North America, Achilles has harnessed the pandemic to normalize a thanatopolitical immunitary response because, in a safer world, people would be more likely to value human rights (Watts, *Seppuku* 211). To maintain control and generate chaos and paranoia amidst the rifters and corpses in the Atlantis settlement, he engineers a new form of β ehemoth (β -Max) that is immune to the original genetic retrofit cure (β -Max 282).

Convinced by Achilles that *Seppuku* is an even more virulent strain of β ehemoth than even β -Max, Lenie and Ken are tricked into hunting down the very people they sent out with

samples to share with others as they (rightly) thought it was a cure. After tracking down the teenager Ricketts who was assisting them, Lenie begins thinking in the euphemistic and dehumanizing language of containment:

Isolate the vector. Call in a lifter.

. . . She had to keep reminding herself. *They're not monsters after all. They're not fire-breathing dragons sent down from the heavens to burn us out of existence. They're working for the good guys.* (*Seppuku* 159-60)

And when thinking of what to do with Ricketts now that he is a vector:

Ricketts had to be

—*decirculated*

—isolated until someone came by to collect him. (*Seppuku* 160)

In these two examples, the language going through Lenie's mind shows a clear cognitive dissonance between her desire to see Ricketts as a person—one she shares community, bonds, and empathy with—and her belief that she has to follow the protocols of containment for the 'greater good,' even though she knows that this will condemn Ricketts and the surrounding inhabitants to death. Esposito argues that the real biopolitical function of postmodern individualism is that it serves as the immunitary ideological basis through which the protection of life is brought about by modern sovereignty so that the individual "appears protected from the negative border that makes him himself and not other" (*Bíos* 60-61). Containing Ricketts means dissolving that border of the individual and the other, transforming him into an object of knowledge in the form of a vector/threat. Having been previously hunted for being a vector, Lenie empathizes with him. She knows all too well what is in store for him. As an infected body, Ricketts is already being an embodiment of what Agamben terms "a political body and bare life"

(*Homo Sacer* 152-3). The dehumanizing language of “vector” and “decirculated” transforms him from a subject with agency and rights into bare life and an object of science—one that must be contained and, ultimately, eliminated. Lenie’s resistance to treating him as a vector opens new alternatives with restorative potentials.

3.1.2 Permeable Posthumanity: Contamination as Cure

The leakiness of the posthuman body contests boundaries and, as a result, is perceived as both infection and possible cure in the *Rifters Trilogy*. Margrit Shildrick’s argument for the need in healthcare to embrace fluid subjectivities and conceptualizations of leaky embodied subjectivities (*Leaky Bodies* 180) provides an informative reading of Lenie as she is equated with β ehemoth on multiple levels and become a fluid subject that crosses lines of real and virtual. Lenie is β ehemoth’s figurative, willful monstrous ‘mother’ who spreads it across North America, and, in the process, she unwittingly becomes the face of a similarly infectious viral meme that circulates in Maelstrom. In a sense, Lenie becomes translated into a digital form, becoming a posthuman assemblage that extends beyond herself. Initially, it is just her name that grants access to normally forbidden parts of the internet because the smart gels associate it with β ehemoth. However, it soon evolves into its own meme/program that proliferates via positive feedback, making her the centre of the Meltdown Madonna and Mermaid of the Apocalypse memes which inspire their own doomsday cult following among millions globally (Watts, *Seppuku* 190). The virtual wildlife (digital programs) proliferate through their positive feedback adaptations and successfully spread the meme throughout Maelstrom.

Lenie, the Madonnas, and β ehemoth become connected by themes of permeability, change, adaptation, and infection. I would even suggest that they are nodes of the same posthuman assemblage, one which destructively threatens the world in apocalyptic proportions

through the infectiousness of β ehemoth yet overturns and disrupts the traditional hegemonic power structures in both the physical and virtual worlds. Barad's concepts of agential realism provide a useful theoretical framework for supporting this argument. For Barad, "agency is about the possibility and accountability entailed in reconfiguring material-discursive apparatuses of bodily production, including the boundary articulations and exclusions that are marked by those practices in the enactment of a causal structure" ("Posthumanist Performativity" 144). Barad's theory of posthumanist performativity attempts to take account of human and nonhuman agencies and their ability to affect boundaries through their becomings.

The production of rifiers, smart gels, and different forms of β ehemoth all enact their agency to redefine various boundaries and practices of production and reproduction. As a vector for β ehemoth, Lenie becomes a primary example of the permeability of bodies and selves and their infectious potential. In *Contagious*, Patricia Wald discusses the portrayal of carriers, stating that in straddling the border between health and illness, carriers draw attention to "the porous and permeable borders of the body and the equally permeable borders between social units . . . Constituting a threat to those borders, the carrier, one of 'the individual parts,' comes dangerously close to being equated with the dissociable disease organ" (77). β ehemoth and Lenie were both "tweaked" genetically and, when paired together, set North America on fire. They are further interconnected in the form of the Meltdown Madonnas who savagely attack all virtual wildlife, even their own kind (197)³⁹. Lenie's journey across North America actively seeding β ehemoth wherever she goes is highly destructive. However, it is also an act of agency that disrupts the hegemonic corporate authorities. As a vector, Lenie embodies an adaptive and infectious posthuman fluidity so that she can get around traditional containment measures. In her

³⁹ Achilles's tweaks turn the degraded remnant of Anemone into a highly destructive and infectious form of malware called Meltdown Madonnas/shredders that project an avatar of a furious eye-capped rifier claiming to be Lenie.

multiplicity, she can be read as a Deleuzian Body without Organs, one that as an assemblage is strung between the “two poles” of stratification (Deleuze and Guattari 160). Thus, Lenie is both able to deterritorialize and reterritorialize the normative dynamics of power. Within her destructive potential is also a form of cooperative assemblage relations that deterritorializes the traditional dynamics of power and which will become important for post-plague survival.

One of the entities Lenie forms such an assemblage with is Anemone—the collective assemblage of virtual wildlife evolved from the earlier Mermaid/Madonna memes. As a virtual entity, it lacks a physical body, but it certainly possesses agency in its effective infection of the virtual sphere to ensure its survival through the proliferation of the Lenie meme and its protecting her by aiding her escape from government containment measures (Watts, *Maelstrom* 247). Her relationship to Anemone offers another example of how leaky human and nonhuman inter-relationships impact each other in ways that “resist categorization, complete knowledge, and mastery” (Alaimo, “Trans-Corporeal” 253). Anemone gains its name because it protects Lenie, the very thing it should kill (Watts, *Maelstrom* 289); but its name also reflects the adaptive posthuman symbiosis that allows it to undermine the institutional and biopolitical forces meant to contain it and Lenie. Through the actions of the smart gel that chose to support β ehemoth, Lenie is tagged as a vector for it⁴⁰. As a result, a rare symbiosis is formed where the viral wildlife adapts to use her name for protection from those gels that would normally attack them. It works because the gels seek to sustain β ehemoth as the ‘preferred’ system and so support any affiliated forms of it. As Achilles explains to Lenie, “you actually inspired a bunch of separate life-forms to make—well, a colonial superorganism, really. Individuals acting as body parts . . . While lineages evolved just to handle conversation with humans. . . . It was all

⁴⁰ Watts further connects Lenie with β ehemoth through having her name be perceived as code that must be distributed globally by the evolving meme/Anemone programs so that β ehemoth can flourish. See *Maelstrom* 246.

genetic. Nobody made the connection” (*Maelstrom* 345-6). Lenie’s actions cause the evolution of a new form of virtual assemblage, one which significantly shapes events in the material world.

Lenie’s unwitting symbiosis with behemoth threatens to destroy the entire biosphere. It also unintentionally offers the possibility to overturn many of the traditional biopolitical power dynamics, forces of production, and containment measures. At the very least, Watts demonstrates how human-constructed systems of power and production can be so quickly usurped and overwritten by the natural forces of evolution, adaptation, and symbiosis that they seek to control. The Madonna and Mermaid of the Apocalypse memes inspire anti-establishment doomsday cult uprisings (Watts, *Maelstrom* 163). Moreover, the horrific memories that the GA implanted Lenie with to assist her survival in the rift also provide her with the instincts to outmaneuver those hunting her by giving her unusual reactions and high-stress tolerance (305, 313). Her body is already a fluid one in its adaptive abilities to inhabit both aquatic and surface worlds, but it further becomes an example of posthuman deterritorialization in the ways it forms a symbiosis with Maelstrom’s denizens, digital doppelgangers, and infections.

In this sense, Lenie’s assemblage relationships become a sort of *pharmakon*. Reading Plato’s *Phaedrus*, Derrida identifies the *pharmakon* as a remedy filled with an ambivalence of meaning in that it is both poison and cure (“Plato’s Pharmacy” 70). He further suggests that the *pharmakon* is ambivalent because it makes up the space in which the binaries exist and “the movement and the play that links them among themselves. . . . The *pharmakon* is the movement, the locus, and the play: (the production of) difference.” (127). In other words, the *pharmakon* becomes the space of instability between seeming binary concepts in Western thought. Lenie models a form of *pharmakon* that exposes the biopolitical binaries and the slippage that can occur between infection and cure. Rather than destroying the Meltdown Madonna that had

infected Taka's mobile clinic, Lenie recognizes it as something extending from a part of herself—or at least a part of who she was (Watts, *Seppuku* 145). After confronting it directly in her headset, she gets Ricketts to reprogram it by activating its “junk code,” triggering a ‘devolution’ that results in it once again recognizing its own kin who have “Lenie” written into their code (193). The newly altered ‘Lenie’ is then returned to Maelstrom to re-infect its ‘siblings’. Returning to their kinship-assemblage roots, they assemble to crash N’AmNet and the firewall blockading it (213), thus disrupting Achilles’s attempt to maintain his control and power over North America’s surveillance and containment systems. The crashing of the firewall is digitally restorative; doing so also creates an opportunity for some of the rare remaining wildlife to potentially replenish the digital ecosystem which mirrors the post-βehemoth physical environment in terms of its decimated biodiversity.

Similar to the important restorative role of the Madonnas in the digital sphere, the potential cure for βehemoth is Seppuku, a new infection which entirely retrofits the body in that it “not only killed itself off when its job was done—it gave birth to a *new* symbiont, a viral one probably, that would take up residence inside the host cell . . . βehemoth would find nothing but *NO VACANCY* signs if it came sniffing around afterward” (Watts, *Seppuku* 241). As Taka finally apprehends, “The only way to win against βehemoth would be to counter infect *everything*” (241). While the previous infections had been the product of human tampering—demonstrating a relationship between the corpses, technoscience, and their deadly and haphazard attempted mastery over life—Seppuku is constructed as a cure, one meant to save the remaining biosphere and delivered without extortion or profit but at the cost of unpredictable evolutionary changes.

Seppuku radically changes the rules of evolution and the biopolitical dynamics of cures and treatments. Instead of maintaining a traditional immunitary defence which has resulted in the

thanatopolitical domination and destruction taking place, it models that illness and health are co-constitutive, and that “No true health is possible that doesn’t take in . . . in the dual sense of the expression to know and to incorporate—illness” (Esposito, *Bíos* 103). The slow seeding of Seppuku through missiles sent by South Africa transforms North America into a massive uncontrolled experiment that may save some biotic life but will also reshape the boundaries of existence, and it achieves it by inviting infection, mutation, and change through the formation of new communities open to that which has previously been threatening and other. A positive immunitary politics requires a rethinking of “the function of immune systems” so that instead of being considered a barrier to exclude the other, they act as more of a space for negotiating what should exist inside and outside the community (Esposito, “Community, Immunity, Biopolitics”). In the *Rifters Trilogy*, the new biopolitical relations offer one potential example, but it only exists after near-total thanatopolitical destruction. However, Watts offers an alternative through infection as cure in the form of an example of a posthuman biopolitics that invites consideration of how a positive immunity politics might be formed through new systems of relations and interactions with other agents—human, animal, bacterial, or virtual—based on rethinking “community” and kinship; one which may be restorative to the environment as a whole.

3.2 The Biopolitical Non-Human: Larissa Lai’s Unruly Others

While Lai’s posthuman characters also raise similar biopolitical concerns to those Watts raises regarding technoscience in the body, *Salt Fish Girl* also provides a powerful critique of how racialized and multiply othered bodies experience bare life under technoscience and capitalism. In *Salt Fish Girl*, Western colonialism and capitalism relate to the dehumanization and racialized exploitation of Asian workers, especially women. Discussing Foucault’s treatment

of racism⁴¹, Rachel C. Lee contends that the limitation and killing of an entire population are required to “promote the enhanced, limitless lives of others” which she terms “Life (Un)Ltd.” (22). In *Salt Fish Girl* those living in the secure compounds are largely white and benefit off of exploiting racialized others such as the Sonia and Miyako clone women. Sharlee Reimer asserts that in Lai’s imagined future, “There is no room in the definition of fully human for anyone who does not adhere to the social norms as determined by implicitly white upper-middle-class heteropatriarchy” (“Logical Gaps” 66). Miranda and Evie are both portrayed as racialized and contagious bodies, and it should be noted that their connections to their past selves cycle through similar experiences; both *Salt Fish Girl* and *Evie* experience exploitive and indentured labour, while Nu Wa’s and Miranda’s complicity with the system that oppresses them repeatedly cause their lovers to suffer. Miranda’s childhood is spent in the privileged Serendipity compound where she is stigmatized for possessing a pungent durian body odour. Her body’s scent also racially marks her in that her durian scent “and by extension, durians, become the sign of her difference, of her Asianness. . .” (Cuder-Domínguez 121). Neighbours and colleagues complain about her scent, driving her father to even risk venturing into the Unregulated Zone to seek out Chinese medicinal cures (Lai, *Salt Fish Girl* 41). Thus, Miranda’s difference also symbolizes her family’s otherness in Serendipity.

Miranda’s pathologization is further amplified by her both non-white and a woman. Discussing the disciplinary “medical gaze” posited by Foucault and Carole Spitzak, Balsamo argues that it constructs female bodies as “pathological, excessive, unruly, and potentially threatening to the dominant order,” resulting in their disciplining by fragmentation into

⁴¹ Foucault positions racism as emerging from an older regime of power’s fixation on blood so that biologized racism leads to politics that dictate family, property, marriage, hierarchy, and the logic of extermination of an entire group of people (*History of Sexuality* 149-50).

redefined, flawed parts (*Technologies* 56). The attempts to cure Miranda's body to make it conform to the disciplined 'norm' render it "unruly"—a body that disrupts the corporate controls and regulations. In Miranda's opening chapter, she describes her scent as though it has its own agency so that it invasively "oozed," "flowed," "poured," "gushed," and "flooded" through every corner of the house (*Salt Fish girl* 15-16). Her rebelling body becomes an example of "putative leakiness, the outflow of the body which breaches the boundaries of the proper" (Shildrick, *Leaky Bodies* 15), something Shildrick attributes to female bodies. Due to their leakiness and fluidity, women possess undisciplined bodies in a medical and biopolitical gaze that favours the rational "masculine" mind over the fluid "feminine" flesh. Reflecting on *Salt Fish Girl*, Lai expresses her intentional use of smell because of its connection to racialized and sexualized others in the form of foreign foods and women's sexual parts ("Future Asians" 72). That Miranda's durian smell is connected directly to her race further emphasizes the nature of the unruliness of her body which denies her total acceptance in the Serendipity compound; unlike the efforts of her parents to fit in, her body refuses to erase its history and origins.

Lai explains that she wrote two ways of relating to smell in her text: "A hegemonic, oppressive one that wants to deny and obliterate and a progressive, liberatory one that wants to acknowledge and reclaim" (172). While in the compound, Miranda experiences acute hegemonic pressures that fit Shildrick's description of self-policing the body to meet the standards of normalcy (*Leaky Bodies* 49). After discovering her father's intention to send her away to be treated by Dr. Rudy Flowers, she feels dirty and ashamed of her body (Lai, *Salt Fish Girl* 72). Miranda even draws a bath and tries to scrub away her scent, only to realize "It came from the inside" (73). Building on the significance of disruptive boundaries in Lai's work, Joanna Mansbridge refers to Julia Kristeva's concept of the abject and the way it disrupts the boundaries

of self/other, pure/contaminated, and “threatens the purity of origins and the integrity of boundaries” (122). In *Salt Fish Girl*, it is only in the fluid mingling of the Unregulated Zone that Miranda learns to accept herself by consuming that which she has tried to abject from her body. Her eventual eating of the durian is a significant act she had previously thought of as being “cannibalistic” (Lai 224). Consuming the durian also helps her connect to her familial and cultural histories which have been lost through corporate erasure and bodily commodification.

Miranda’s childhood also involves an encounter with a different racialized other when she catches sight of strange women in blue bodysuits in a hidden area of the boiler room of her school. When she asks Ian, the classmate who led her there, about the women, he tells her “They’re not women. They’re Janitors,” and continues “Most of them are illegal, you know. And they’re primary carriers of the Contagion” (76). The women all have their organs rearranged with implanted silicone-like material along their spine, which Ian suggests implies they have undergone an experimental therapy (77). This encounter establishes two things: firstly, the biopolitical erasure and exploitation of ‘illegal’ female labour, and secondly, their medicalized objectification so that they are not “women” but “janitors” and “carriers” of disease.

Furthermore, Ian’s statement underscores the gendered dualisms that permeate biopolitical categorizations, so that ‘woman’ is often a normative category that is exclusionary to certain forms of racial or bodily types within its unity (J. Butler 19-20). In this case, Ian reveals the normative cultural matrix at work within Serendipity’s hegemonic society through his denial of the janitors being women because of their hybridity of technology and flesh and their positions as invisible, racialized labourers renders them unintelligible as women⁴². The blending of flesh with technology specifically challenges the nature/culture division (Balsamo 5), so that

⁴² That the racialized workers are also considered vectors for disease alludes to historically longstanding racist Yellow Plague narratives of that correlate Asian countries and peoples with disease.

the bodies of the women not only become unintelligible within those codes but also objects of horror for Miranda who can see that “the organs had been shifted” (Lai, *Salt Fish Girl* 77). In doing so, the cyborgs are perceived as non-human and outside social concern or questions for how corporate fragmentation might extend to citizens as well (T. Lee 101). While *Salt Fish Girl* explores the liberatory potential in hybrid, posthuman, and cyborg identities, it also takes care to present how technoscience under capitalism creates biopolitical inequalities by excluding certain groups (in this case hybrid others) in order to better exploit them for their surplus-value by rendering them a form of property and bare life that is denied citizenship or rights.

Evie is Lai’s strongest depiction of the exploitative and invisible labour done by those deemed bare life and denied ‘human’ citizenship through the biocapitalist system of patents and unchecked corporate power. Through Evie, Miranda learns of the lived realities of the Sonia and Miyako clones as disenfranchised others. Evie is heavily pathologized as an unnatural and somewhat monstrous clone (Reimer, “Troubling Origins” 10). She also firmly embraces her hybridity, explaining to Miranda: “I’m not human. . . . My genes are point zero three percent *Cyprinus carpio*—freshwater carp. I’m a patented new fucking life form” (Lai, *Salt Fish Girl* 158). Mansbridge contends that the “The clones offer the possibility as made objects of labour, to contain and commodify difference. As Rudy Flowers’s creations, the clones are also a product of the pervasive effects of biopower” (127). Evie and the Sonias signify an even greater extreme of what was depicted in the *Rifters Trilogy*, the natural next step in bio-genetic capitalist enterprises—the patenting of the entire life-form itself rather than the parts or genes that comprise it. While Lenie has patented technology inside her, Evie’s entire body is entirely corporate property. Evie and the Sonias critically point back to both Oncomouse and Dolly the sheep. The former was created for profit-driven “trafficking between the laboratories and the

marketplace,” and the latter “pollutes the natural order simply by being manufactured and not born” (Braidotti, *The Posthuman* 75). Like these objects of technoscience, the Sonias are also trafficked from the lab to the marketplace as an invisible source of exploitable labour.

Additionally, Evie’s origins are the product of technoscience and biopiracy, placing her within a much greater narrative of the intersections of race, gender, capitalist technoscience, and corporate exploitation. Haraway’s “Cyborg Manifesto” puts forth women of colour as being understood as cyborgs partly because they “are the preferred labor force for the science-based industries . . . for whom the world-wide sexual market, labor market, and politics of reproduction kaleidoscope into daily life” (32). Lai’s clones embody such a corporate cyborg politics in Evie and the Sonias being created from the Diverse Genome Project which “focused on the peoples of the so-called Third World, Aboriginal peoples, and peoples in danger of extinction” (Lai *Salt Fish Girl* 160) so that all the Sonias and Miyakos have “Brown eyes and black hair” (160). Race is now both patented and commodified. The Sonias also complicate the hegemonic boundary of artificiality asserted by the ‘born versus made’ paradigm. By critiquing the entanglements of technoscience and race through clones, Lai points out the slipperiness of our seemingly secure definitions of human rights and its erasure by corporate biotechnology’s hybridization and rendering of biomedica extending to all orders of lifeforms.

Lai’s novel was published during a time of intense scientific debate sparked by research projects such as Dolly and the Human Genome Project and *Salt Fish Girl* expresses concerns regarding systems of bio-genetic reproduction under capitalism⁴³. In their essay on cloning cultures, Philomena Essed and David Theo Goldberg suggest that while one might assume that

⁴³ There are currently concerns being raised regarding the recent CRISPR biotechnology and its potential to permanently alter genetics that would be passed on through cell lines. Lai’s critique of patenting is still meaningful for projects that increasingly raise challenging ethical questions regarding non-human animals as objects of science and human-animal hybridization for bio-medical study.

human cloning would result in “preferred types” of humans such as white, heterosexual, able-bodied males destined for privileged social environments, “One can also imagine the cloning of non-white, able-bodied, good-natured, caring, docile, moderately smart but not too intelligent bodies to do the service work those more privileged seem to demand more and more” (98). This is certainly the case for the Sonias. Evie believes the newer models are more passive and less intelligent than earlier generations. Miranda’s new sister-in-law Karen, whose uncanny resemblance to Evie implies she is a clone, supports Evie’s suspicion (Lai, *Salt Fish Girl* 158-9). Miranda finds Karen disconcerting and thinks of her as “an empty vessel” with “empty eyes” (214). Karen’s “empty” gaze and passive domesticity exhibit a form of the hypothetical feminized, docile labour suggested by Essed and Goldberg. Her silence also contrasts sharply with Evie’s and the liberated Sonias’ active attempts at industrial sabotage. Miranda’s descriptions further echo the uncanniness, discomfort, and fears of soullessness commonly associated with clones, something she does not experience around Evie or the free Sonias.

Evie’s origins also play a critical role in revealing the history of biopiracy through her story of the specific source material for the Sonias. Evie tells Miranda that it is rumoured among the Pallas Sonias that the original genetics came from a Chinese woman named Ai and a Japanese man who were interned during WWII and whose “bodies were sold to science” after they died (Lai, *Salt Fish Girl* 160). This origin reveals the complex history of exploited racialized bodies and how technoscience profits from them. In turn, the postcolonial histories and narratives that Lai brings to the surface are those erased by capitalism and corporate science; revealing them offers a vision of the present and future because “In the era of genetic engineering and patents, life itself is being colonized” (Shiva 39). Shiva argues that new biotechnologies under capitalist patriarchy reassert traditional binary narratives of nature/culture,

active/passive (45). This is particularly noticeable in the narrative surrounding the case of Henrietta Lacks that, while not directly referenced by Lai, at the very least shares a connection to the mythical Ai through the biopiracy of her body.

Henrietta Lacks was a Black woman who died of cervical cancer in 1951, some months after receiving a biopsy from John Hopkins University hospital (R. Lee 16). The hospital sent her tissue biopsy to a lab without her knowledge or consent (Landecker 172). It was subsequently distributed to other laboratories and pronounced as containing an “immortal” cell line (R. Lee 17). Though never patented, the various labs using her tissue culture certainly profited from transforming her into a biomedical subject (172-3). Certain parallels exist between the immortalization and transformation of Lacks into a biomedical subject through her biopsy cells and Ai’s body being sold to science after her death, only to be used as the progenitor of countless clones. These similarities underscore the treatment of racialized subjects as bare life. Lai leaves it unknown whether Ai’s body was sold with permission, but her wartime internment implies it was likely done without consultation. Like Lacks’s cell line, Ai’s cells are biomedical property and are freely cloned and distributed in the form of the enslaved Sonia factory workers.

Ai’s cells have also sparked their own origin story whispered among the Sonia workers. Origin stories and their retelling, Haraway argues, allows cyborg authors to subvert the central origin myths of Western Culture (“Cyborg Manifesto” 33). Evie seems to support such an assertion in her belief that the narrative around Ai as the Sonia originator “would be a perfect focus for revolt” (Lai, *Salt Fish Girl* 160). Lacks’s cell line’s racist characterization as an uncontrolled, threatening, and contaminating force (Landecker 171) also informs an understanding of the racism underlying Dr. Flowers’s explanation for sending the Pallas police to destroy the Sonias and their garden. He tells Evie “the fertility of those durians was neither

natural nor controllable. It was too dangerous” (Lai, *Salt Fish Girl* 256). The durian (and its symbolism of Asian heritage) is deemed a threat because its reproductive potential cannot be contained by the figure of the white male corporate scientist.

Robyn L. Morris draws parallels between Dr. Flowers and Shelley’s Victor Frankenstein, arguing that both men are “seeking to enact a white future through patriarchal control of human and non-human reproductive processes” (90). Flowers’s concern regarding the reproductive agency the durian grants the Sonias also underscores their position as property. In harnessing the power of the durian to enable a woman to become pregnant “without any need for insemination” (Lai, *Salt Fish Girl* 258), the liberated Sonias have achieved reproductive freedom by exploiting the same biotechnological processes that create them (Morris 90). Their children (the Doras) will grow up free, thus offering a heterotopic space to form a community of women that exists outside of corporate regulation. The Sonias regain some freedom from masculine technoscience and patriarchal heterosexual relations through the durian fruit (Villegas-López 35). They could not have attained this freedom otherwise as the all-female clones are isolated in Nextcorp compounds. Corporations gain from the instability created by transgressing certain boundaries, especially through biotechnology; Nextcorp “does not produce goods; it has the power to produce commodified life with a commodified consciousness. Evie is an example of a particular form of commodified life that has been cloned for the sole purpose of maintaining an inexpensive labor force for the purpose of consumer goods” (T. Lee 100). Restricting the Sonias’ reproduction is undoubtedly done purely to maximize said productive labour.

The underlying anxieties informing Dr. Flowers’s choice to destroy the “degenerate” Sonias and the durian tree seem largely motivated by a desire to contain proprietary bodies and biotechnology. Biotechnology enables capitalism to gain power over independent and non-

colonized life (Shiva 45). Such biocapitalist colonization manifests in *Salt Fish Girl* through Dr. Flowers's desire to contain and limit the Sonias' agency and freedom to have offspring. Writing about the disciplining of bodies in *Salt Fish Girl*, Eleanor Ty observes that science and capitalism together work to regulate bodies (97). Ty connects the hybridity of the women in Lai's novel with unregulated bodies. Women's bodies have often been affiliated with such an idea, a fact which Lai shows through Evie and Miranda's unruly bodies. Dr. Flowers's conversation with Evie also underscores the way he views the Sonias as bare life; he repeatedly emphasizes they "were not human" and paints them as degenerate and monstrous (Lai, *Salt Fish Girl* 255-56). Despite Evie being his adopted daughter, he sent her to the Pallas Shoe Factory because he could not control her (252). Much like the janitor women, Evie's body was implanted with a Guardian Angel device to control and monitor her biometrics, offering both medical and physical surveillance to prevent escape (158). Evie and her sisters' bare life status is significant for facilitating a critique of the implicitly white maleness of the human subject (Morris 92), further deconstructing the naturalization of that subject and its assumed mastery over nature.

In addition to challenging the Western human subject, the way the Sonia and Miyako clones are positioned as bodies that are easily disposed of for the 'security' of the population is equally as important for its depictions of a postcolonial necropolitics. Mbembé defines such necropolitics as the "massacre" where "If power still depends on tight control over bodies . . . the new technologies of destruction are less concerned with inscribing bodies within disciplinary apparatuses as inscribing them . . . within the order of the maximal economy now represented by the 'massacre'" (Mbembé 34). Lee notes that in racial studies, subaltern bodies commonly occupy the position of *zoē*, that of "bare animal and cellular life" rather than "politically recognized life" of *bios* (28). In *Salt Fish Girl*, the violent execution of the Sonias at the

safehouse by the Pallas police sent by Dr. Flowers is a necropolitical mass-execution. As subaltern bodies, they occupy a bare life status with no political enfranchisement. It is initially uncertain whether the Sonias are being detained or have been taken somewhere because, “Without a legal existence to begin with, they could not be reported missing” (Lai 249-50). However, the elderly Sonia 14 eventually finds them buried in an unmarked mass grave near the forest (250). For the Sonias, their non-personhood marked them as killable due to them being outside of the law. The same corporate police are later described as having “brown uniforms” with “clicking boots” (264-5), further connecting the Sonia mass-execution with the dehumanization and bare life of the Nazi death camps.

The treatment of the Sonias as bare life also reinforces a biopolitical posthuman connection to animals, one that demonstrates the exclusions and instability of anthropocentric subjecthood. While acknowledging that *zōē* is traditionally understood as unprotected animal life in race studies, R. Lee further observes that even into the twenty-first-century, moral panics over disease outbreaks like SARS have elided Asians with nonmammalian life such as in the recent fears of avian flu⁴⁴ (47). Lee adds that “the process whereby the human is reduced to the insect, rodent, bird or microbe—what I will be calling ‘*zoe*-ification’—remains a persistent method of rendering fellow humans as a race or ‘species-being’ apart” (48). Lee’s “*zoe*-ification” points to a posthumanization of the bodies of certain peoples—in this case, Asian bodies—by connecting them with potentially infected animals. The Sonias are positioned as possible carriers of the dreaming disease, recalling Ian’s assertion that the janitor women are “primary carriers of the Contagion” (Lai, *Salt Fish Girl* 76). The “*zoe*-ification” of the Sonias is attributed to their 0.03% carp DNA that denies them human status and deems them a killable form of labour.

⁴⁴ Or even more recently, the discussions around Asian wet markets in relation to COVID-19 and racist remarks calling it the Wuhan virus.

The clones' racial, gendered, and posthuman identities connect to an immunitarian discourse in terms of boundaries that define health, community, and self vs other. At the same time, I would argue the biopolitical exclusion of the Sonias also reveals the fragility of the humanist subject in its need to construe the Sonias as non-human in order to maintain the privileged status of the white male subject in the global capitalist future. The Sonias' connection with the dreaming disease which Dr. Seto tells Miranda grants people memory structures from animals (103), allows them to model a potential new posthuman subject, one that has been de-anthropocentrized by the dreaming sickness through its penetration of the human-animal boundary at the very level of memory.

The link between the Sonias and animals is further validated through our cultural myths of authentic origins and patriarchal deity figures. As Evie says to Miranda when they are in the aquarium visiting her carp 'mother', "if you look at this, and it makes you believe in God, then you also have to believe that it was all meant for human pleasure. Which makes it perfectly all right to shut these beautiful things up in tanks and bottles. The logic is built right into the architecture" (Lai, *Salt Fish Girl* 262). Evie's disobedient 'Eve' status intentionally subverts that narrative logic. It rejects a political reinforcement of the species boundary that Vint describes as where animals are taken only as knowledge objects to reinforce the boundaries of what is "properly" human (*Animal Alterity* 16). The biopolitical system that denies Evie and the Sonias human rights perpetuates the exploitation and experimentation of animal life because it is all constructed as bare life, thus subject to human control. Whether Oncomouse or Evie, the "architecture" of society that allows them to be declared property and without rights stems from the socio-cultural knowledge-power system and institutionalized hegemonic beliefs descended

from Judaeo-Christianity and Enlightenment humanist philosophy. Lai's text suggests that change the system, one must dismantle the social architecture supporting it.

3.2.1 Zoē-potentialities and (re)productive possibilities

As with the future potentiality in the *Rifters Trilogy*, the biopolitical aspects of the future in *Salt Fish Girl* are not entirely negative. Beyond the posthuman potential to de-anthropocentrize memory and identity through the connection of the clones with the dreaming sickness, Lai's text also reflects a positive form of biopolitics in the form of *zoē*. In Agamben's work, *zoē* emphasizes the vulnerability of the human body when reduced to nonhuman states by a sovereign power, thus subsuming it in death and the liminality of an embodied life that "does not qualify as human" (Braidotti, "The Politics of Life" 180). Braidotti adapts Agamben's definitions of divided life to argue that as part of a posthuman vitalist politics, *zoē* "refers to the endless vitality of life as a process of continuous becoming" (182). Braidotti's rethinking of *zoe* is rooted in the argument that since *bios* is traditionally reserved for the human subject, *zoe* is the othered and inferior opposite (177). Arguing for a "*zoe*-egalitarian" turn in order to engage in more equitable relations with animals, Braidotti's vitalist politics offers "an ethical appreciation of what bodies (human, animal, others) can do" (*Posthumanism* 71-2). Evie's connection to her carp mother and the other aquarium creatures could be one such example of a *zoe*-based vitalism.

A further example of how Lai presents posthuman potential functioning within the biopolitics of her text is through the Sonias' empowering reclaiming of fertility-granting biotechnology, especially for queer relations such as those between Evie and Miranda. The Sonias have harnessed the transgenic potential of the durian tree that, like them, escaped from the laboratory, granting them access to a non-normative means of reproduction which represents "the possibility of a reproductive futurity separate from heterosexual copulation (or even genetic

material from men)” (P. Lai 174). The idea that the root of Dr. Flowers’s perception of the Sonias as monstrous and corrupt stems from their non-normative reproductivity is consistent with Verena Stolcke’s observation that the threat of cloning as a form of asexual reproduction comes from the fact that cloning renders male participation in reproduction essentially unnecessary (35). Neither male biological material nor their physical participation is required anymore, displacing them from a position of power and control which is eschewed in the capitalist system. Dr. Flowers can be thought of as the liberal humanist ideal of *Homo faber* which Haraway describes as man producing “everything, including himself” (“The Promise of Monsters 67). In contrast to the illusory image of compulsory heterosexuality Dr. Flowers aims to uphold through him taking a clone wife (Dr. Seto) and daughter (Evie), the free-born Doras and their rebellious Sonia mothers destabilize such controls through their reappropriation of a reproductive technology that liberates them from the heterosexual social norms Aimee (Miranda’s mother), Karen, and other Sonia and Miyako women endure.

As both an anchor to their cultural heritage, and as a tool of reproduction, the biopolitics surrounding the transgenic durian becomes a positive one in its liberatory potential for the clones and the queer relations between Evie and Miranda. The Doras have no fathers; their origins are cyborg origins in that they are born from technology, fruit, and liberated cyborg women. Procreation is often a naturalized process connected with an essentialized concept of womanhood, yet Lai re-envisioning it. Lai’s first chapter featuring the creation of people by the serpent goddess Nu Wa frames procreation in technological terms by having her claim the procreative ability she has rendered her creations with as “her latest invention” (*Salt Fish Girl* 5), something Reimer argues demonstrates Lai denaturalizing both creation and the Judaeo-Christian creation myth (“Troubling Origins” 8). Doing so also works denaturalizes the claim of

“creation” for the clones as property, something Lai further complicates with the Sonias’ use of the durian biotechnology to reproduce, thus creating multiple potentialities where the line between natural and technological is shattered.

Salt Fish Girl ends much like it began, with a birth/act of creation, but this time with Miranda giving birth with the assistance of Evie while they sit in a salty hot spring entangled in their hybrid goddess serpent/fish-human forms (269). The painful embodied act of birth links reproduction to the maternal rather than the technological, thus allowing for “a contestation of historically embedded textualizations of human origins as a natural, Western and paternal creation” (Morris 91). However, in having the child be the result of reappropriated technology, Lai avoids essentializing the heavily constructed category of women as maternal figures. Additionally, this moment of birth includes a utopian impulse, something Baccolini and Moylan argue is a feature of critical dystopias where utopian hope is embodied in an ambiguous ending that leaves “a space of contestation and opposition” (7). In bringing together technological/natural, human/cyborg, and human/goddess, *Salt Fish Girl* can be thought of as offering a form of *zoe*-egalitarianism in its breaching of the long-perpetuated division of born versus made. If reproduction is no longer necessarily natural, being ‘made’ is no different than being ‘born’. There in the briny waters of the salt pool, binary divisions collapse—at least temporarily—allowing for new reterritorializations of posthuman identity to occur.

3.3 Bare Matter: The Lives of Seeds and Windups in Bacigalupi’s *The Windup Girl*

The treatment of life as bare life/*zoē* also permeates Bacigalupi’s novel in many of the same ways that it is presented in Watts’s and Lai’s works. Like these texts, it critiques the scientific reduction of life to base biological material in Western capitalism to patent, exploit, and produce surplus value in the form of biocapital. However, *The Windup Girl* offers a much

deeper examination of the destructive competition to produce “biocapital.” Kaushik Sunder Rajan defines biocapital as a new form of traditional capital that now involves newly emerging currencies “such as biological material and information” (17). Genetic patent laws offer a clear illustration of biocapital in repeated efforts to create distinctions that would enable patentable DNA⁴⁵. Bacigalupi as well as Lai and Atwood all express concerns through their work regarding such divisions of matter from its source for profit by gene companies—an act that also constitutes a totalizing form of commodification of life.

The rendering of bare life in patent law also bears gendered connotations. As Donna Dickenson notes, women are often connected to nature while men—especially men in science—are connected with the “controlling, inventive mind” (143), a clear reminder of the lasting influence of Cartesian dualism and the continued subjugation of the flesh in favour of the rational ‘male’ mind. *The Windup Girl* opens with the perspective of Anderson Lake, a Western agent working for an agribusiness seeking to acquire access to the Thai’s genetic treasury. The juxtaposition of colonialism, gender, and designation of life as *zoē* becomes apparent as he examines a new fruit at a local market and scrutinizes the “strange hairy fruit[‘s]” body and skin for any “stink of cibiscosis” “scab of blister rust” or “graffiti of genehack weevil” (Bacigalupi 2). He admires and reveres this untainted fruit, comparing it in his mind to a divine miracle, not because it is a newly created product or because it is uninfected by disease but because it is unique in being the product of Thai gene-hacking—something independent and not yet under the power of the Western calorie monopolies (3). His fetishization of the body of this fruit, produced by Thai adaptations of Western technoscience, becomes a colonial gaze that seeks ownership and

⁴⁵ The American Supreme Court overturned much of the previous patenting of the human genome in its June 12, 2013 decision that “naturally occurring” DNA sequences could not be patented; however, an appeal to Congress to re-examine this decision began hearings in June of 2019 (Molteni)

understanding of the feminized and fertile surplus nature existing in the Thai's seedbank which has allowed them to reconstruct fruits like the *ngaw* (a resurrected rambutan). Anderson seeks to decipher this fruit's genetic mystery of origins because it has not yet been deciphered by the Western seed companies. The era of patented and genetically modified life means that life itself has become the "new frontier" for colonization (Shiva 38). Like early European colonizers, the *ngaw* and its uncharted—and unpatented—genetics comprise a body not yet claimed by the seed companies, making it a consumable exotic object for Anderson.

The *ngaw* is transformed into an Orientalized fetish object for Anderson to admire, consume, and then attempt to fully possess by unlocking its genetic origins. The *ngaw* is described as having a red tinge and soft hair that sensually tickles his palm, delivering to his taste buds "a fist of flavour, ripe with sugar and fecundity" (Bacigalupi 2), thus instilling it with a seductive and feminized body. While Anderson's worshipful reaction to the fruit might appear to be treating it as sacred, the reality is that the fruit symbolizes something that his company does not yet own. Its "fecundity" and sensuality as an object of surplus genetic value is furthered by the later discovery that, unlike the Western seed products the *ngaw* can be cultivated from its seeds since the Thai "don't make sterile gene-rips" (92). The *ngaw*'s viability is significant as it connects contemporary material history with racialized bodies in the text, including Emiko's.

The seeds represent a form of bare life to the agricultural companies. While the Thai attempt to protect their seedbank from Western control, seed company agents like Anderson actively attempt to gain access to its unpatented genetics that can be converted into capital. The text details Anderson sitting fittingly on the veranda of Sir Francis Drake's with other Western corporates experiencing frustration at the fact that:

Somewhere in this country a seedbank is hidden. Thousands, perhaps hundreds, of carefully preserved seeds, a treasure trove of biological diversity. Infinite chains of DNA, each with their own potential uses. . . . Des Moines could mine genetic code for generations, beat back plague mutations. Stay alive a little longer. (Bacigalupi 86)

Anderson is no different from sixteenth-century gold-seeking explorers like Francis Drake; his conception of the seeds as a “treasure trove” underscores a colonial desire to exploit all he can from the Thai with little concern for their welfare or local stability. Furthermore, the description of the seeds and their “infinite chains of DNA” reduce them to the potentiality of their bare material for profit. According to Shiva, Western scientific developments and mechanical philosophy led to a paradigm shift that resulted in nature being viewed as “inert, dead, and manipulable matter” that “was eminently suited to the exploitation imperative of growing capitalism” (47). Anderson’s fixation on the fragmented code of the seeds, rather than their non-commodified vitalist power, certainly renders them as bare “manipulable” matter. While personifying nature through an essentialized nurturing and feminine role is also problematic, emphasizing the reduction of life to its seemingly inert base materials like DNA enables easier rationalized exploitation of them as *things* to be marketed, reconfigured, and patented. *The Windup Girl* critiques the reduction of life to bare material, especially in how Gibbons, the former Western gene-hacker scientist now working for the Thai, treats Emiko and other New People as a design/programmed “genome” (Kurtz 184-5)—one which he, as a ‘god-like creator’, could benevolently improve upon⁴⁶.

As a form of visibly marked bare life, Emiko lives as an exploited and classless non-citizen with no civil liberties. New People are also (often derogatorily) referred to as windups

⁴⁶ While the terms windup and New Person are both used in Bacigalupi’s text, the latter term emphasizes that they are people while “windup” emphasizes mechanical, unthinking behavior.

because of their “stutter-stop” movement (Bacigalupi 38) Being a New Person, Emiko is genetically created with specific modifications including incredibly smooth skin that tends to overheat (44), immunity to the current bioplagues, and superhuman reflexes (104). New People serve an accepted role in Japan where they were created to fill the labour shortage (297). There, Emiko recalls they are treated as an “exquisite valued object,” but in Thailand, they are considered a “transgression against niche” (106) due to their being engineered. Much like Agamben’s articulation of life being rendered bare life/killable through the severing of it from its form by the political apparatus of exception (*The Use of Bodies* 263), Lai’s Sonia and Miyako clones and Bacigalupi’s New People are a form of *zoē*. In being made and ‘part animal,’ both Lai’s clones and Bacigalupi’s New People are politically excepted forms of bare life.

In her essay examining the intersections of race and technoscience in *The Windup Girl*, Malisa Kurtz argues that in being “Reduced to the level of technological commodity, Emiko is little better than a slave in every sense of the word. Because prostitution has been illegal in Thailand since 1960, Emiko’s involvement in that occupation positions her as outside legal protection” (181). Emiko’s exploitation in the sex trade as a subservient New Person is innately connected to the capitalist biopolitical designs to fill labour and market desire, making her “an object that humans can treat with repugnance or with utilitarian apathy,” revealing a “reticence on the part of human beings to face her existence as a product of their own participation in the global capitalist economy” (Hageman 295). While the Japanese treat New People with more respect than the Thai, they view them as “necessary tool[s],” where Emiko was to be destroyed after she had “fulfilled her duty—” to her master who chose not to return with her to Japan (Bacigalupi 298-9). While the Japanese emphasize the usefulness of the New People, their utility is only as an elegant class of disposable slaves. Through Emiko, *The Windup Girl* examines the

problematic biopolitics intersecting technology and labour, especially in terms of sex and labour. Discussing contemporary sex workers, Paul Preciado notes that they are becoming cyborgized/technologized so that they are rendered “living bodies denied entrance into the political sphere, deprived of public discourse. . . . the worker is becoming a sexual biomachine” (314). While not all New People are sex workers, Emiko’s ‘model’ is trained to fulfill the role of secretary and companion and treated as a labouring body-machine. In this sense, it is not just the Western treatment of life as a patentable resource that is problematic and exploitative but also the Thai and Japanese treatment of the New People.

The “cyborgization” of bodies also intersects at the level of race. Emiko’s instrumental treatment as a performing object underscores the dangers of what Kevin Robins and David Morley term “techno-Orientalism,” which includes the association of Japanese identity with being “cold, impersonal, and machine-like, an authoritarian culture lacking emotional connection to the rest of the world” (169). For Stephen Hong Sohn, in the shift from traditional Orientalism to techno-Orientalism, “Even as these Alien/Asians conduct themselves with superb technological efficiency and capitalist expertise, their affectual absence resonates as an undeveloped or, worse still, a retrograde humanism” (8). The Japanese New People and the affiliation Japan has with high-tech culture in *The Windup Girl* resonates with this techno-Orientalism, especially in the sexualized bodies of New People like Emiko and their mechanical movements that leave them marked, feared, and denied personhood based on their artificial origins. Much like the blurring of living beings with machines in early robots and automatons, New People disrupt the Buddhist Thai’s definitions of natural and unnatural and underscore the intersections of racism with technology in their being accepted neither as Japanese nor as human.

In addition to being racialized, Emiko's programming and training to be a passive servant mirrors concerns expressed by *Salt Fish Girl* in the creation of the Sonia and Miyako clones. While Lai's Sonias have Guardian Angel devices implanted in them to control them and later clones are made to be more complacent, Emiko offers a different sort of servility, one that extrapolates the language of programming used in genetics into the social programming of the subject. Predicting Emiko will seek a new "master" to serve, Hiroko tells the Thai Environment Ministry's captain, Kanya, "it is in our genes. We seek to obey. . . . We must serve within a hierarchy. She must find a master" (Bacigalupi 302). This directly connects Emiko's repeated rapes and exploitation as a sex-worker with the scientists who designed her body to perform that way. Discussing colonialist biopolitics in relation to genetics in *the Windup Girl*, Selena Middleton observes that Emiko is aware of how her body is a colonial project at the very level of its genes (132). Responding to Shiva's argument that new biotechnologies "reproduce the old patriarchal visions of activity/passivity, culture/nature" and that biotechnology enables capitalism to colonize regenerative life (45), Otto argues capitalist colonization is played out in *The Windup Girl* through Emiko (133). Like Lai's narrative, Bacigalupi connects patriarchy with capitalism and colonialism in both the treatment of nature as a feminized object of conquest and the creation of technologized peoples as new forms of slaves and sexual objects.

As white Western men in positions of power, Anderson and Raleigh both treat Emiko as property. Anderson wonders "if she were a real person if he would feel more incensed at the abuse she suffers" (184), while Raleigh fully asserts that he owns "every part of [her]" (159). Kurtz ties Raleigh's claim of possession to racism and capitalism (183-4); however, I suggest that it also intersects with gender, especially in terms of autonomy. Women's bodies are biopolitically constructed "as a public reproductive system (womb, reproductive cells . . .

understood as ‘public goods’ and research materials)” (Preciado 170). Dickenson similarly argues that women and are generally treated as “open access” in regard to their biological material (38). Designed to be sterile, New People like Emiko are animalized in ways that further reify their subhuman status—one historically attributed to women and people of colour—thus denying their subjective and bodily autonomy.

The Thai uphold traditional born/made distinctions through their belief in “niche”. Kanya illustrates this when she explains her hatred of New People to Hiroko, the New Person assisting her, by saying: “You are all unnatural. You are all grown up in test tubes. You all go against niche. You all have no souls and have no *kamma*” (Bacigalupi 302). Kanya’s prejudice is both culturally produced and stems from a fear of Otherness, especially from technologically mediated Others. While the Thai’s own modified fertile crops are accepted, ‘foreign’ genetically engineered bioforms are perceived as unnatural and invasive. Emiko is seen as a plague-like invader by the Thai because she is genetically created and, therefore, no different from the destructive and invasive chameleon-like cheshire cats and bioplagues that have decimated the environment. As bare life, she is not only disposable but also vulnerable to violence and exploitation, something emphasized by Bacigalupi in graphic rape scenes where Emiko is publicly violated for entertainment. She is more than an illegal alien; she is as Andrew Hageman writes “an illegal non-human alien who would be shredded and recycled if discovered (294). Emiko, the cheshires, and engineered plagues and seeds are forms of life that have been separated from any political status, leaving them to be deemed useful or disposable products.

Describing how bare life/*zoē* functions, Braidotti contends that in works such as those of Giorgio Agamben, *zoē* is “readily assimilated to the economy of non-life,” and is “assimilated to death in the sense of the corpse, the liminal bodily existence of a life that does not qualify as

human” (“The Politics of Life” 180). Along with Emiko, the cheshires fit this liminal definition of an existence that holds no value to human society, and like New People, the Thai believe the cheshires have no soul (Bacigalupi 173). While cheshires were created to be cute pets for spoilt Western children, they quickly spread around the world upsetting wild ecosystems, displacing domestic felines, and leaving the natural bird species with little chance of survival against their superior ability to blend in with their background (26, 113-14). The cheshires are hated and killed by the Thai and Westerners alike (113, 173). Their position in the text functions to provide what Hageman terms “the gaze of the techno-animal other,” where they offer a poignant nonhuman animal complement to Emiko and the New People (296). This gaze permeates the events of the text, bearing witness to the violence and destruction of life that occurs through strategies of containment, institutionalized racism, and speciesism.

3.3.1 Containment and Contagion: Controlling the Creations

Like Watts’s and Lai’s texts, containment in various forms permeates *The Windup Girl* with arguably the most notable example being how the Western seed companies seek to possess the viable seeds in the Thai seedbank so that they can patent them and foreclose their fertility like they do with their own crops. Viability, as I argued regarding *Salt Fish Girl*, poses a threat—especially if one is to maintain proprietary control of biocapital. When linked with post-industrial capitalism, biotechnology enables the colonization of “that which is autonomous, free, and self-regenerative” (Shiva 45). The Thai justifiably see the attempts to gain command of their seedbank as a new form of imperial slavery (151), one which will only increase their dependence on the Western agricultural companies and their infertile crops. In terms of material history, Bacigalupi’s sterile seeds seem to draw inspiration from Monsanto’s attempts at a “terminator gene” which aimed to achieve exactly what the agricultural companies in his novel do by

maintaining total control of their products through eliminating their reproductive potential. The terminator technology “is a combination of genes that can theoretically be spliced into crop plants and cause every seed produced by those plants to be sterile, effectively shackling growers to annual company-controlled seed purchases” (McQuiston 192). *The Windup Girl* expresses existing anxieties regarding genetic contamination from genetically modified foods through the need to continually re-engineer food to survive the new mutated strains of diseases (Bacigalupi 3). Chris Hables Gray lists common anxieties regarding genetic modification of crops stating “Not only is it unknown whether or not there is any health risk for the consumers of such food, but there is a real danger that engineered genes might escape into other species or have unanticipated consequences” (116-17). *The Windup Girl*, like all my focal narratives, undermines the faith in technoscience to control genetic transfer once set loose in nature, inviting readers to rethink the presentation of genes as passive forms of biocapital while also resisting painting them as unnatural or monstrous crimes against nature.

Returning to the example of the *ngaw*, it is one of many genehacked fruits the Thai have managed to unlock through their seedbank. Like the durian in Lai’s novel, the *ngaw* embodies a potentiality to subvert biopolitical control and exploitation of productive bodies through its material history being reclaimed by the Thai through genetic technologies. Biotechnology critic Jeremy Rifkin argues that the corporate competition to patent the planet’s genetics completes a centuries-old history to “privatize all of the great ecosystems that make up the earth’s biosphere” (38). Rifkin’s point speaks to the overlapping levels at which efforts to contain genetic migrations, exchanges, and reproductions operate and how they are deeply interconnected with global colonialist expansion. Morton further supports this criticism, stating “What’s wrong about genetic engineering is that it turns life into private property to enrich huge corporations” (*The*

Ecological Thought 86). GMOs can be either beneficial or harmful, but the main concern is that nature is becoming exclusive private property (Hardt and Negri, *Multitude* 183-4). In *The Windup Girl*, this threat extends beyond just seeds to include animals and humans in the form of New People, suggesting that the biopolitical endgame of corporate genetics is an eventual monopoly on all life in existence. The value of the Thai seedbank and the symbolic importance of seeds like the *ngaw* thus extends beyond the Thai's continued economic independence from the West to the very continued existence of free genetic material and unenclosed nature itself.

The seed corporations are primarily stationed in the Midwestern United States (Bacigalupi 3). Their exclusively Western origin is an example of the real-world problem of neocolonialist biopolitics; patenting, Vint argues, ignores any native claims to being the creator(s) of any specific strains of plant or animal life (*Animal Alterity* 116). The colonialist relationship with genetic technologies is notably demonstrated in *The Windup Girl* through Emiko and the seedbank. Like the corporate-made seeds, New People were engineered infertile, making them further dependent on the corporations that create them by ensuring they cannot exist independently from them (Bacigalupi 358). This is also very similar to the situation of the all-female Nextcorp clones in *Salt Fish Girl*. Tracing out the capitalist harnessing of biogenetics to produce surplus value in a way that breaks from traditional industrial production, especially from companies such as Monsanto, Melinda Cooper cites sterilization technologies for plants as an example of how contemporary forms of production enclose on life's future potential, even when extracting its labour because it guarantees "it never reproduces 'for free'" (25). Much like the measures to contain the free and reproductive labour capacities of the transgenic durian and renegade Sonia clones, Bacigalupi's novel presents a future where attempts to maintain exclusive

control over the potential surplus “labour” of seeds—the very symbol of life—is achieved by rendering them infertile so that they cannot generate life outside the lab.

Emiko was created without ovaries to ensure both that she does not reproduce on her own and so that any sexual labour expected of her can occur without the risk of pregnancy. She argues this was done because they had learned from the mistake of the Cheshires and, thus, made the New People sterile to prevent “the opportunity to supplant the human species entirely with her own improved version,” consigning her instead to a “genetic dead end . . . just like SoyPRO and TotalNutrient Wheat” (114). However, considering that New People are proprietary to Japanese biotech corporations like Mishimoto to fill labour gaps (297), applying Cooper’s argument regarding sterilization to contain surplus value suggests it was also done to ensure that their labour remains exclusive to Mishimoto and its customers. Campbell suggests that the increasing desire for genetic circulation in global capitalist economies means an increasing threat of populations becoming perceived as mere tissue reserves (*Improper Life* 124). Emiko’s connection of her own foreclosed future groups her with the patented consumable products she lists, making her a tissue culture that is rendered sterile to maintain proprietary control.

One final and significant aspect of biopolitical containment worth exploring is how practices of control intersect directly with technology in *The Windup Girl*. Boundary controls at the level of self “implies a strengthened control over the flows in and out of the body” (Falk 25). If we are to use the term “body” to apply to the nation and its biopolitical practice as a geographical and cultural body, the Thai people in *The Windup Girl* have become increasingly closed to the outside world in an attempt to preserve the conceived independence of the nation. They have adopted a form of negative immunitarian politics. Hageman regards the Environment Ministry in *The Windup Girl* as “a ministry of walls, combatting the neoliberal sundering of any

and all barriers to global trade . . . working to restrict certain types of interconnectedness in the wake of devastating effects” (291). These immunitarian restrictions have produced a fear of otherness so that foreign bodies, especially genetically hybrid ones, are perceived as a potential threat that could destabilize the nation-state.

The Thai government has been fighting to contain the out-of-control genetically engineered plagues that have wrought destruction upon the globe. Like Watts’s CSIRA, The Ministry of the Environment is increasingly taxed with looking after its people, even when it means burning forests, people, and crops to achieve it (Bacigalupi 120). Increasingly, the Ministry “has found itself in the center of all life” (121). Life, however, is never so easily managed; genetic technologies infiltrate the markets and bodies of the populous through food, diseases, even spores. McQuiston notes that while their unseen impact intersects with the theme of ecological contamination, “Unlike Haraway’s OncoMouse™ or glow-in-the-dark kittens, drought-resistant soybeans do not, as it were, wear their artificiality on their sleeves. They . . . enter the food supply invisibly, an analogue to the mundane and often untraceable routes along which pesticides and fertilizers enter our hair and blood and bones” (181). Like the proliferation of the wild durians and the infections in *Salt Fish Girl* and the *Rifters Trilogy*, *The Windup Girl* envisions genetic material that freely circulates through globalized markets, nature, and bodies.

Heather I. Sullivan argues that in Bacigalupi’s future, the government attempts to control all exchanges at the genetic and economic level, making human bodies “dirty, diseased matter under continual threat from rapidly spreading diseases causing mutation and decay” (“Dirt Theory” 520). Invasive technoscientific experiments like the cheshires have resulted in the Thai viewing all foreign technologies as contaminating nature/niche. Essed and Schwab assert that multinational corporations developing cloning biotechnologies hardly hide the fantasies of

gaining control over life, death, and nature (10). I contend the same is true for biogenetic technologies in general in that they aim to contain nature, yet also infiltrate culturally, reflecting the cultures of replication which “encourage, if not determine, social replications” and their role in perpetuating and reproducing “cultural homogeneity (global culture), and indigenous cultures” (12). Gibbon’s confrontation with Kanya over gene-hacking voices these fantasies through his belief that scientists like him are now nature’s “gods” who might shape life to produce “the Eden that beckons us” (Bacigalupi 243). She rejects his suggestion to allow one’s genetic future to be shaped by foreign corporate scientists because she perceives anything produced by multinational corporations to be already tainted by the previous mass deaths caused by the blights, diseases, and destabilization of governments by Western agricultural and genetic corporations (243). For Kanya, globalized technoscientific advancement is inseparable from the uncontained genetic lifeforms previously unleashed by corporations that still refuse to take responsibility for them.

While much of *The Windup Girl* centres on the various levels of attempted containment of forms of biotechnological exchange, genetic flow, and the invasiveness of its products, it is not without its spaces of resistance and open possibilities. Bacigalupi’s ending can be interpreted in several ways. It ends with Gibbons offering Emiko the potential of purely technologically produced offspring who would not need to be bound by the genetic restrictions that prevent her own proliferation and rebellion (358-9). On the one hand, the survival of Gibbons at the end to offer New People the ability to reproduce can be interpreted as an embracing of the Frankensteinian reproductive power and challenges of “unstoppable fruitfulness” (Sullivan, “Dirt Theory” 522). Gibbons’s offer could undo the economic and biopolitically exploitative controls programmed into Emiko’s body, ensuring future generations might not suffer the gross violations and indignities she experienced. Derek King also reads the “alliance” between Gibbons and

Emiko as a positive one in resisting the nostalgic and controlling position of the Environment Ministry that draws strict lines between natural and unnatural (12). King contends that *The Windup Girl* resists utopian closure through Gibbons's god complex and assertion of humans as new gods mastering nature, arguing that Kanya's and Gibbons's extreme positions produce double negations that lead to "an anti-capitalist, global vision of equal access to the technologies of food protection" (12). While one might hope that Emiko gains what she desires, the text's juxtaposed negations resist giving readers a simplistic solution achieved through either a totalizing mastery enabled through technoscience or an immunitarian exclusion of it.

Hageman, similarly, regards the novel's numerous contradictions as a form of resisting replacing traditional paradigms with new ones, an approach that, in turn, "avoids reifying conventional boundaries used to separate the purportedly 'human' from the 'non-human'" (293). I agree that the resistance to closure and the extreme positions reflected by Kanya and Gibbons, as well as the uncertainty of the ending, creates its own genetic and generative space of possibility. The novel's ambiguous conclusion enables readers to contemplate and weigh the consequences of such approaches and to consider the real-world challenges to sort through the entanglements generated by the clashes of globalization, multi-national corporations, and advances in biotechnology. Furthermore, the text's challenge to the seemingly clear demarcations of natural and unnatural attributed to life bears a similarity to Esposito's implicit suggestion in *Bios* of an affirmative biopolitics that unhinges life from the category of sources we see as being worthy, investing it into every form of life that appears through individuation (Campbell xxxii). As individuated forms of life, New People, the cheshires, and other engineered beings are no longer denied value based on being made instead of born and will go on to create new niches for themselves.

Moreover, the continued existence of the seedbank through Kanya's military rebellion results in the dispersal of the seeds by monks to prevent them from falling into the hands of the seed corporations (Bacigalupi 353). This dispersal ensures their genetics and fertility will not be foreclosed on by the biocapitalist processes of genetic exploitation. King discusses the utopian potential of the Thai's fertile seeds, arguing they offer an alternative future that opposes the "monolithic vision of biocapitalism" (14). King acknowledges that the patenting and biopiracy committed by the agricultural corporations hinges on the same genetic material that offers resistance in the form of the Thai's seedbank and enables their independence (7). The survival and dispersion of the seeds generate a space of ruptured potential in the fact that they remain generative symbols of hope existing within the climate-changed future of the text; however, their survival does not offer deliverance from the realities of that future. While the seeds have been secured by the Thai, the problems of biocapitalist globalization and the threat of Western corporate sabotage are merely avoided. However, the potential of the seeds does invite readers to consider alternate possibilities and also the significance and necessity of preserving genetic vitality and diversity to help ensure both socio-economic and ecological stability.

3.4 The Biocapital of Women and Posthuman Pigs in Atwood's *MaddAddam*

As with my previously discussed authors' works, Atwood's *MaddAddam Trilogy* depicts the exploitative biopolitics practiced by corporate science where all life becomes potential capital and where the politics of containment function within a biocapitalist framework to maintain power over bio-genetic creations and individuals. In separating the already apocalyptic conditions of the compound world with the survival-focused aftermath in her trilogy, she also creates a space for a new critical posthuman biopolitics to emerge, one that includes an openness to interactions with other forms of life, sentience, and ways of being that consider the habits of

consumption and the categories of food, other, and the body. While my focus is on the biopolitics governing posthuman beings, largely the Crakers and hybrid animals such as the pigoons, I must connect such biopolitics with those governing the bodies of women and animals as they are interconnected forms of bare life.

In her discussion of the binary divisions between man-woman and human-animal which underscore many aspects of biopolitical culture, Vint observes that male is more closely connected with the “human” and female with “animal” and that they have a complex role in the human-animal relationship (*Animal Alterity* 90). Citing Derrida’s deconstructive analysis of subjecthood and the human-animal where he contends that “Power over the animal is the essence of the ‘I’ or the ‘person,’ the essence of the human” (Derrida, *The Animal* 93), Vint argues that Derrida identifies this masculine subject as abjecting women for not being fully human because “they have not sufficiently distanced themselves from animal, embodied being” (*Animal Alterity* 91). Atwood connects the overlapping positions of women and animal others, situating them as subjects denied full human status within a capitalist system. Both women and animals are translated into posthuman subjects in the *MaddAddam Trilogy* through the pathologizing of their bodies and the transformation of them into objects of consumption. Annette Lapointe suggests “Atwood’s dystopias emphasize a breakdown at the borders of ‘humanity’ so that some animals crawl into the class of ‘Human’, and women slide helplessly into the realm of ‘animal’” (132). While in the aftermath of the “waterless flood”/plague women like Toby, Ren, and Rebecca take on important roles of authority and human-animal relations find new meaning, in the time before it, animals and humans alike were commodities for human consumption with women often animalized for sexual consumption and animals designated objects of biotechnology.

Year of the Flood draws strong connections between women, ‘meat,’ and their fragmentation into parts as bare life. Addressing biocapitalist instrumentalization, Braidotti argues a form of “post-anthropocentric practices” have emerged that erase demarcations among categories such as animal/human, male/female, life/death, yet, in doing so they incorporate them into “global networks of control and commodification” targeting life (*The Posthuman* 64). Through the lives of Ren, Amanda, and Toby, Atwood depicts how surplus value affects women in a global capitalist world. After the death of her parents, Toby sells her hair, and later her eggs, on the black market for those deemed “unsuitable” to be issued a parenthood licence (*Year of the Flood* 32). Her body is reduced to the value of its parts, while young women like Ren end up as bodies circulating visually at clubs like Scales and Tails. According to Braidotti, “embodied subjects have to be accounted for in terms of their surplus value as bio-genetic containers on the one hand, and as visual commodities circulating in a global media circuit of cash flow on the other” (119). Atwood’s women in the pre-flood world offer an example of this dual ‘value’ through their being categorized as economic commodities of pleasure, trade, prey, or even meat, which emphasizes that “women have become consumable, sexualized and eroticized objects” (Bouson, “We’re Using Up” 14).

Atwood’s narrative depicts a biocapitalist system including a *zoe*-ified tissue economy that extracts the surplus value from women’s bodies. Jean Halley argues that “Gendered female labour, domestic and unpaid, quietly reproduces biopower” (Halley 11), a fact that is presented in numerous examples throughout Atwood’s trilogy, especially through Toby’s experiences working at SecretBurgers. As a young woman, Toby ends up hired by a burger chain owned by a violent mobster who abuses the women he hires as objects for his pleasure till they are “wasted” and he has them killed (Atwood, *Year of the Flood* 36). Secret Burgers’ meat Grinders render

human and animal alike into an edible product so that, “you might find a swatch of cat fur in your burger or a fragment of a mouse tail. Was there a human fingernail once?” (33). The meat grinders advance “a series of binary interconnected associations: meat/animal, animal/victim, animal/women, meat/women, consumerism/exploitation” (Botta 122-3). It can also be read in terms of Braidotti’s argument that post-anthropocentric biocapitalism dissolves boundaries to better incorporate them in global markets. The bare life categories of woman, animal, and meat all blur into a singular, violently produced consumable product.

Atwood’s pre-flood world reveals the ugly corporate “post-anthropocentrism” that dissolves humans into categories of bare life, despite their gender or race. J. Paul Narkunas contends Atwood demonstrates how posthuman critiques fail to consider how capitalism has already taken the world operations outside of human conception (4), so that “Life, including nature, becomes a speculative algorithm for futural monetization” (19). Narkunas posits that biogenetic capitalism is posthuman in its transformation of the human into bare life and, thus, fails to properly intervene in disposing of anthropocentrism and its humanist values that feed into capitalist cycles. Certainly, as Amelia DeFalco observes, Atwood’s narrative demonstrates a body understood as “biomedia” so that “life can be understood as informatics and, therefore, as quantifiable, modifiable, and marketable” (349). However, I assert that Atwood positions biogenetic capitalism as being more in line with Braidotti’s argument that biocapitalism is “post-anthropocentric” in its deconstruction of species boundaries but “not necessarily post-humanistic” because, while humans are removed from *bios* and rendered firmly into *zoē* along with animals and non-humans, there are possibilities in this weakened division so that it acts as a “mixed blessing” for both humans and animals (*The Posthuman* 65, 76). Ironically, it is the weakened species divisions and reductions of life into biomedia and bare life that also enables

Crake's Paradise project to succeed. Crake's genocide is reprehensible, but it also is an example of one of those "mixed blessings" in that it creates a potential for renewal for the environment—both for the species that remain and for the new genetically modified species such as the rakunks, Wolvogs, liobams, and pigeons that find new niches to fill outside the labs.

While my other focal texts depict systems where the biocapitalist economies have resulted in a bare life status for certain individuals, Atwood's work examines in greatest detail in the lives of those who live privileged lives in the compounds a form of what Nikolas Rose terms "molecular politics," where the "management and maximization of life itself have become the life's work"(17). Yet, what is also revealed in the post-anthropocentric blurring of traditional boundaries in Atwood's dystopic corporate future is a necropolitics that underscores its society so that "the enormous capital gains of the super corporations rely upon a carefully remediated market of, and for, death, a death hidden in the very products of consumption" (Appleton 64). One can see this in the example of Toby's mother; she worked dutifully for the HealthWyzer corporation selling their supplements, only for them to turn her into a test subject for some of the diseases they were testing on Pleeblanders and bankrupt her family through their expensive and futile medical treatments (Atwood, *Year of the Flood* 25-6, 104-5). Crake later learns that his father had been killed for trying to alert the public that corporations were testing new diseases on the Pleeblanders so that they could market cures (Atwood, *Oryx and Crake* 256-7). These Pleeblanders (like Toby's mother) have become "human guinea pigs for corporate profit" (Appleton 68). The exploitative system they inhabit consumes them for the benefit of those in the corporate compounds, reducing human life to a consumable, instrumental economic commodity.

Normally bio-reductionism occurs at the species level; only humans are afforded any significant value while all other lifeforms are assigned instrumental value, putting those with low

instrumental value to humans at risk of extinction (Shiva 24-5). However, Braidotti contends that the emerging bio-genetic economy of advanced capitalism “induces, if not the actual erasure, at least the blurring of the distinction between the human and other species, when it comes to profiting from them. Thus, seeds, plants, animals and bacteria fit into this logic of insatiable consumption alongside various specimens of humanity” (*Posthuman Knowledge* 96). Animals have long taken the position of test subjects for human cures, treatments, and experiments⁴⁷. However, the system in Atwood’s future not only consumes the lives of Toby’s parents and their stable home life but also results in costing Toby herself parts of her body, and very nearly her life as she is reduced to figurative meat—and quite nearly physical meat—working at Secret Burgers. Biocapitalism in Atwood’s corporate future has erased the usual anthropocentric boundaries in areas of knowledge production and consumption in a necropolitical manner so that all life is reduced to instrumental value within its consumptive logic. These blurred distinctions reveal much about the bare life economy and how technoscience shapes Western societal understandings of life, suggesting that so long as divisions that privilege some life over others exist, there will always be categories of bare life.

By bringing women and humans to the same bare life status as animals, Atwood’s narrative creates an opportunity for critique. Animals are already treated as production units; Atwood merely imagines the next logical step of life fully yoked to a biocapitalist economy, thus demonstrating a form of “animal capital”. Nicole Shukin coined the term “animal capital” to draw attention to “the paradox of an anthropocentric order of capitalism whose means and effects can be all too posthuman, that is, one that ideologically grants and materially invests in a world in which species boundaries can be radically crossed (as well as reinscribed) in the genetic and

⁴⁷ Though Western countries have also historically placed many humans in a category of bare life, including disabled and Indigenous persons and people of colour—especially women of colour.

aesthetic pursuit of new markets” (Shukin 11). The sex club Scales and Tails already alludes to the animalization of its sex workers in its name and the animal costumes it dresses its “girls” in. This animalization is furthered though by the fact that it also hires ‘temp’ workers from largely immigrant and racial minorities for Painball customers because they are disposable. (Atwood, *Year of the Flood* 130). The blurring of human and animal, especially women and animal, again ends in both finding their end in a consumer ‘meat’ market. Atwood’s bio-genetic economy, the lives of women, illegal aliens, and impoverished Pleeblanders occupy the same space as the compound-created technoscientific animals, especially the pigeons.

Atwood’s pigeons are one of the many hybrid lab creations in the trilogy and play an important role in the modelling of overcoming otherness and finding ways of living with other creatures without treating them as already always meat. The pigeons are hybridized with human DNA, including human neocortex tissue, but are regarded as walking organ factories. Their use-value is in their ability to produce tissue, organs, and potentially even brains for human beings. To achieve this, the pigeons have been modified to grow rapidly with multiple livers, hearts, and kidneys so that “such a host animal could be reaped of its extra kidneys; then rather than being destroyed, it could keep on living and grow more organs” (*Oryx and Crake* 27-8). The rendering of the pigeons as organ factories is a good illustration of Shiva’s observation that our current mechanistic perspectives where pigs are treated as machines dominate the meat industry, having harmful impacts on how they behave and their health (32-3). No one recognizes the pigeons’ sentience or their suffering as organ donors in enclosed lab conditions⁴⁸. The treatment of the

⁴⁸ Contemporary ‘pigeon’ experiments to grow human organs inside of pigs have sparked ethical concerns that they might integrate human neural tissues—perhaps because of Atwood’s trilogy. See Sarah Knapton’s 2017 article on human-pig embryos in *The Telegraph*. The chimera pigs are still treated as medical objects of science to solve human transplant organ shortages, demonstrating our continued anthropocentric biopolitics.

pigeons as a form of organ crop, rather than a living thing, underscores their status as mere objects for human use and at the cost of both the environment and the pigeons' well-being.

While the pigeons reflect the biocapitalist transformation of living beings into objects of productive and reproductive value in a way that parallels the treatment of women in Atwood's pre-plague society, it is the ChickieNobs who complete the instrumentalized rendering of a lifeform into a *bio-object* of pure use-value. I have coined the term "bio-object" to emphasize the organic liveliness of an entity that has otherwise been rendered a thing within the biocapitalist system in an effort to directly undermine attempts to render it an object or form of bare data. In his introduction to the *CAFO Reader*, Daniel Imhoff observes how creatures have been reduced by corporate agribusinesses into "production units" (such as meat or milk), and that domesticated animals are increasingly altered to "meet the conditions of their confinement" (xiv-xv). Such alterations achieve a transformation of the animal so that "Not only has the animal been totally incorporated into human technology; it has become a fully designed instance of human technology" (Haraway, "Otherworldly Conversations" 85). The ChickieNob offers an extreme example of an animal so integrated with technology that it is a human-designed object.

The ChickieNobs are chickens that have been genetically modified and transformed into morbid bio-objects 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, *Oryx and Crake* 246). The ChickieNobs do not even have heads, having been reduced to a "mouth opening at the top" to dump food in, and no brain functions beyond those necessary for "digestion, assimilation, and growth" (246). They are life fully optimized for surplus-value. As one who has fully embraced transforming life into biomedica to code, program, and toy with, Crake sees nothing wrong with reducing the chicken to a bio-

object. Even human beings are just “meat-computers” with problems to be solved by pirating from other creatures (*MaddAddam* 43). The ChickieNobs, among other creations, reflect how the instrumentalized politics of life enabled and often endorsed through technoscientific culture separates living things from their ecological and interconnected systems to turn them into objects of use. When life is comprehended solely as biomedica, “the body’s affective sensuality, its interactions with other bodies and environments, and its capacity for and dependence on affects, connections, and relationships appear secondary, even irrelevant” (DeFalco 439). Thus, biocapitalism’s blurring of species divisions merely results in new divisions of nature/culture, technology/biology where life is considered transposable into data and is thoroughly removed from its ecological and embodied contexts.

3.4.1 Containing the Creations

As the creator of the “waterless flood,” Crake is a marked example of someone who does not seem to truly understand what life in an embodied and interrelational context looks like. While aiming to dismantle the corporate machines and human habits Crake recognizes are destroying the planet, his methods and attitudes towards other lifeforms replicate that same destruction through his understanding of life as biomedica. There are many similarities between Crake and the other male scientists I have discussed. Like Scanlon, Crake views human beings as imperfect machines/ faulty hormone robots that can be improved (Atwood, *Oryx and Crake* 203). His desire to remake the world demonstrates confusion and blurring of the human with the divine through his genetic fluency, empowering him to commit eugenics-driven global genocide to craft his image of paradise (DiMarco 183-4). Rather than use the breakdown of binaries to explore interdependent bonds and relations, he treats biology as “functional material; modifying, engineering, and manufacturing life forms without any concern for the ethical or ontological

consequences” (DeFalco 440). Crake’s arrogance and lack of concern for research ethics position him much like both Dr. Flowers and Gibbons in that he does not draw divisions between natural and artificial and refuses to take responsibility for the violence and harm caused by his research.

As a scientist figure, Crake harkens back earlier cyborg and posthuman narratives in his belief that demonstrating mastery over nature gives one the ability to “feel like God” (Atwood, *Oryx and Crake* 59). His experiments are a closing-off of potential and genetic exchange through attempts to control biology. The “end-goal” of his Paradise project demonstrates a firm attempt to limit and contain “what bodies are and what they can do” (DeFalco 441). This is evidenced in Crake’s modifications for survival using DNA from other species while simultaneously trying to excise parts of the brain that would give the Crakers the ability for abstract thought to prevent them from following the same path as humanity (Atwood, *Oryx and Crake* 367). DeFalco argues that Crake reflects “the obsessive focus on the body’s informatic materiality [that] stifles the affective, relational, and ethical dimensions of life,” thus hampering the “transformative potential of bodily matter” (441). His belief that life can be distilled into programmable code to create a perfected replacement for humanity feeds into the long tradition of male scientist figures espousing an anthropocentric philosophy of mastery and domination of nature through science.

Crake also possesses a transhumanistic belief in a superior biological end-goal achievable through technology. The Crakers are “programmed to drop dead at age thirty—suddenly, without getting sick” (Atwood, *Oryx and Crake* 364). Crake has edited out the fear of death, granting them a form of ‘immortality’ that blurs a transhumanist vision of paradise with a deeply ageist paradigm that suggests that when a body is no longer optimal, it also loses its use-value—a potent example of how he has absorbed the instrumentalist culture of his biocapitalist society. It also denotes Crake’s faith in genetic determinism—that he can engineer out any characteristics

he sees no purpose for, including culture, existential anxieties, language, and symbolic reasoning (Narkunas 14). Discussing Crake's attempt at "domesticating" humanity, Hannes Bergthaller argues that he has "literalized the pastoral fantasy of humanism—he has employed the tools of genetical engineering in order to breed the wildness out of man, creating a species of human beings that will be congenitally unable to soil the planetary *oikos*" (735). It is ironic that with his distaste for romance and culture, Crake's 'taming' of humanity by replacing it with the Crakers seeks to return the world to a form of idealized pastoral Edenic vision of life without humans.

While Crake has 'optimized' the Crakers with several beneficial survival traits including UV resistance, natural insect repellent, purring that promotes healing, and herbivorous grass-based vegetarianism (Atwood, *Oryx and Crake* 194, 191), he has also engineered them with significant reproductive controls. Crake has ensured Craker populations do not become too numerous by tying their reproduction to pheromones released only under ideal conditions every few years; sexual interest only exists when a female Craker is in "heat," and only for those four males that she chooses to mate with (201-2). Through Crake, Atwood depicts humanity bringing about their own extinction as a result of the instrumentalization of life; *Homo sapiens* are deemed inadequate in their adaptation to the "new modeling realities of life in speculative sociobiology and transhumanism" (Narkunas 13). Unlike the usual "Frankensteinian" anxiety that genetically altered beings could supplant the human species, as in *The Windup Girl*, Crake fully intends for his Crakers to slowly and sustainably multiply as a superior successor.

Crake's attempt to first control human populations through secret sterilization delivered through his marketed BlyssPlus pill (Atwood, *Oryx and Crake* 346) and his decision to instead wipe them out entirely reveals a form of destructive immunitary biopolitics. Esposito argues that "If the first immunitary procedure of eugenics is a sterilization, euthanasia constitutes the last (in

the ultimate meaning of the expression)” (*Bios* 132). Like Agamben, Esposito turns to the Nazi project of the medical-eugenics goals of the camps to illustrate the thanatopolitical path towards death that stemmed from an immunitary desire to preserve their “chosen race” (*Bios* 137-138). Crake has embraced a similar thanatopolitics in that he is convinced that he must commit mass genocide to restore health to the biosphere. Perceiving humanity as a ‘disease’ upon the planet, Crake develops his bioplague encapsulated inside the BlyssPlus pills he distributed globally (Atwood, *Oryx and Crake* 389). While his actions are rooted in a desire to give the biosphere a chance to regenerate, he closes off possibilities for humanity through “his altruistic duty to remake the world ironically in his image . . .” (Narkunas 16).

However, Crake’s thanatopolitics are something he has internalized from a system that goes well beyond him. Bergthaller suggests that Atwood proposes human society collapsed because it failed to domesticate “the human animal” out of its natural behaviour to destroy important life-sustaining ecological conditions (732). While Bergthaller’s argument is valid, it overlooks the social-engineering goals of capitalism that have emerged since the industrial revolution which Atwood takes to a logical extreme through the corporate compounds. Compounds like HealthWyzer are “sealed off from contamination, both from disease and from non-corporate people” (Appleton 67). Jimmy and Crake’s lives as compound dwellers are carefully controlled to keep them separate from Pleeblanders so that “Whatever nomadic desires to cross real physical boundaries Jimmy and Crake may have . . . they are curbed through their community’s domestication of them” (DiMarco 178). The pleeblands are perceived as a “giant Petri dish” of uncontained bioforms and diseases (Atwood, *Oryx and Crake* 346). In contrast to the perceived filth, poverty, and lawlessness of the pleeblands, the compounds present themselves as enclaves of health, safety, and stability through militarized security.

Life in the compounds has become a eugenics and social engineering project to generate intellectual biocapital. As a part of their domestication, children like Crake and Jimmy are taught skills such as “family heredity research” and “wise genetic match-mating” (49). Teaching genetic matching alludes to a normalization of eugenics further supported by custom baby companies like Perfectababe who offer custom-built children for those who can afford them (302). Jimmy regularly registers his parents' feelings of disappointment as accomplished scientists with a child who does not share their aptitudes (59). As a “word” person, he is marginalized by his society’s focus on producing people who are basically bio-computers for solving problems and coming up with new marketable products (DiMarco 171). For compounds like HealthWyzer, the purpose of reproduction is to guarantee future optimized producers, no different than the logic driving the creation of the pigoons or ChickieNobs.

The marginalization and devaluation of those animals or humans who do not rank well in production are further reflected in the ethical values possessed by those educated within the compound societies. Crake views humanity as poorly optimized “hormone robots” (Atwood, *Oryx and Crake* 203). With this in mind, it is no wonder that he eventually goes on to dispose of the older model for a ‘more optimal’ form of his own design. As a product of his society, Crake has internalized an ethics of biomedicine where, “This ‘instrumentalization’ and ‘datafication’ of life leads to insularity, restricting or omitting opportunities for affective relations . . . in which bodies affect and are affected by the world around them” (DeFalco 327). This is not to release Crake from his unethical and irresponsible decisions, but to position both him and Jimmy within the context of what can be read as a biopolitical transhumanist project to limit the affective and “non-productive” behaviours of humanity to render them properly instrumentalized producers.

Atwood's warning is that instrumentalized life leads to the hegemonic reduction of all life to its use-value, leading to a literal 'dead-end' for humanity and many other species along with it.

3.4.2 Outside the Garden Walls: Community and Zoe-Based Biopolitics

As with the other texts in my dissertation, one can locate resistance to the foreclosure of possibility. Despite the many layers of containment, especially the coded language of infection that is present in Atwood's trilogy, life resists being contained by technoscientific mastery. Much like the cheshires and bioplagues in *The Windup Girl* and *Salt Fish Girl*'s genetically reproductive durian, *Oryx and Crake* contains mentions of biotechnological experiments escaping. Wolvogs, pigeons, liobams, rakunks, and bobkittens have all survived in the aftermath of the plague and are repopulating the landscape. Even before Crake's plague, the text implies that hostile bioform outbreaks have become common so that when it starts, Jimmy assumes that "The boys and girls with the HotBiosuits and the flame-throwers and the isolation tents and the crates of bleach and the lime pits would take care of it as usual" (388). Like the passivity to the thanatopolitical day-to-day containment of bioplague outbreaks in Watts's trilogy, Jimmy's initial lack of concern demonstrates how the normalization of regular infectious outbreaks developed by corporations has left his society ill-equipped to handle a real epidemic. The mention of lime pits conjures images of the mass graves dug during the Black Death, something horrific that has clearly been normalized. The entire capitalist system is destabilized by Crake's plague, leading to its collapse and the survival and escape of many former objects of science. In this sense, Crake acts as a kind of *pharmakon* in that he kills through his plague, yet also cures the dysfunctional biocapitalist relationship to the planet (Canavan, "Hope But Not For Us" 154). Crake's actions also underscore the liminality of biotechnology as neither a utopic tool of salvation nor a complete source of destruction. Recognizing their liminality is necessary for

contextualizing technology as a part of an embedded posthuman politics where its meaning is very much dependent on its interrelations with other phenomena.

While Crake cannot be separated from the violence of his actions, in this case, the failure of technoscience has a positive effect by destabilizing the transhumanist projects and capitalist post-anthropocentric biopolitics of the pre-plague world. Crake already embraces a politics of what Haraway terms “genetic fetishism,” a non-critical relationship to technoscientific apparatuses and narratives where the gene is seen as a “blueprint that makes everything” (Haraway and Goodeve 91). One of the major ways Atwood resists this genetic fetishization is in Crake’s failure to completely control the Crakers’ genome. While designed to be incapable of symbolic thinking or imagination, through Jimmy’s (and later Toby’s) stories, the Crakers develop a pseudo-religion around Crake and Oryx and even begin creating their own rituals. Jimmy observes the women deciding to hold communion with Oryx. To his surprise and amusement, “they’re conversing with the invisible, they’ve developed reverence” (*Oryx and Crake* 192). Even more surprisingly, the Crakers are not supposed to be able to read or write, yet Toby teaches the ever-curious Blackbeard to do both; by the end of *MaddAddam*, Blackbeard has inherited the position of storyteller previously occupied by Jimmy and later Toby (*MaddAddam* 385). In this sense, if the Craker’s are a programmed genetic platform, language itself recodes it, opening new possibilities that Crake had thought he had foreclosed on.

Atwood’s narrative further achieves the destabilization of Crake’s attempted eugenics through the Crakers’ genetic mixing with some of the humans, resulting in a future generation of hybrid Craker-human children that leave an open possibility regarding what traits they might exhibit. Atwood’s ending resists foreclosure by emphasizing the indeterminacy of the body and the gene, thus undermining the “assumption that we can determine what a body is, that we can

quantify ‘life itself’” (DeFalco 441). Much like the ending in *The Windup Girl* where the reader is caught not knowing what choice Emiko will make regarding Gibbons’s offer to unlock her genetic potential, the Craker-human children leave the reader wondering what qualities (positive or negative) may be unlocked by these genetic exchanges.

While this open potentiality allows for new sets of biopolitical relations to occur, it also refuses to exclude the negative indeterminacies of what a body and gene can do in their interactions. Discussing the effects of Crake’s failures, Theodore F. Sheckels argues that the Crakers’ emerging religion leaves it uncertain what else Crake was unsuccessful at completely engineering away; jealousy, distrust, or possessiveness could also return (151). The Crakers’ emergent abilities challenge Crake’s totalizing attempts to control nature. His endeavour to engineer out things like love, jealousy, racism, and hierarchy in order to eliminate rape and violence is already undermined by the fact that Crake fails to prevent violence towards women from entering his “paradise” (Narkunas 15). Ren and Amanda’s rape by Craker men occurs because they misunderstand that the women accept their flower ritual offerings, not because they wish to have sex, but because they have already endured a traumatic rape by male Painballers and fear further violence (Atwood, *MaddAddam* 12-13). The persistence of sexual and physical violence in the post-plague world reminds readers that there is no return to an imaginary innocence; new affirmative biopolitics must instead be actively negotiated.

Describing the way Esposito imagines community emerging from immunitary actions, Timothy Campbell argues in his “Translator’s Introduction” that instead of the norm of immunitary strife, there is the possibility of “an immunization that, rather than attacking its communal antimony, fortifies it. *Bíos* as a political form of life, a community, emerges out of an immunization that successfully immunizes itself against attacking what is other” (xxxii). In other

words, forming a community inclusive of others protects it from the thanatopolitical struggle to exclude what is other. The newly cultivated relations between human and pigoon that occur in *MaddAddam* reflect a tense but open possibility in line with Esposito's affirming communitary biopolitics, as well as Braidotti's life-affirming politics of "zoe-egalitarianism between humans and animals" that involves sharing the biosphere in a non-hierarchical manner through a relationship that is not posited on speciesism (*The Posthuman* 71). This vitalist biopolitics extends specifically to forms of life traditionally excluded from political enfranchisement and community considerations due to their non-human status.

Rather than falling back into traditional organizations that determine all non-human animal life to be food or objects for use/consumption, both humans and pigoons, through the help of their Craker interpreter, carefully negotiate new categories of food, friend, ally, and fellow creature in ways that resist traditional binary divisions and instrumental views of bare life. The pigoons agree to not eat the garden or any humans in exchange for no longer killing them and aiding them in protecting their young from the Painballers (Atwood, *MaddAddam* 270). The human-pigoon alliance opens an exchange that challenges their traditional views of life and species-value while reflecting a new form of community that is fluid in its integration of inter-species beings: human, Craker, and pigoon. By aiding the pigoons and forming a covenant agreement with them, the survivors have begun an immunization process against the Other.

The pigoons are tentatively transitioned from a threat and food-source into fellow creatures. Vint observes regarding our biopolitics of food, the majority of people "may be comfortable with the notion of eating meat, even if they prefer not to think of it as something that originates in a living being. But it is something else to imagine eating beings who came to humans and ask for our help" (*Animal Alterity* 25). Atwood's narrative destabilizes the

human/animal, food/friend binaries, thus creating a space to reconsider one's relations within the greater ecological system and to challenge normative biopolitical hegemonies that utilize technoscience to render life as biomedica for the sake of its surplus-value. The pigeons become an extended part of the human-Craker community, even voting in the Painballer trials, and participating in the funerals for Jimmy and Adam One (Atwood, *MaddAddam* 369, 374). The final image of a posthuman community suggests that despite the many indeterminacies at the end of the text, Atwood's trilogy appears to close with an example of a vitalist affirmative biopolitics that is not constrained by an anthropocentric hierarchy that privileges humans above other lifeforms by denying them agency or sentience. The ending, therefore, invites readers to consider new biopolitical relationships of life that reject hegemonic and instrumental divisions of it.

3.5 Conclusions:

Contemporary advances in biotechnology and computing have changed our definition of life and our relationships with other species. Technoscientific hybridization means that biopolitics is not only schizoid in its representation, but continually immersed in an economy of endless circulation (Braidotti, "Transposing Life" 71). Through their science fiction narratives, Watts, Lai, Bacigalupi, and Atwood all examine how contemporary bio-economies engage in a thanatopolitics that co-opt certain elements of posthumanism such as hybridity and mutation in the process of translating all matter to bare life and marketable biomedica. Watts's demonstration of the ongoing anxieties of how biomedica and biopiracy result in disastrous environmental devastation, as well as an overall devaluing of life through corporate exploitation, are echoed by Bacigalupi and Atwood through their pandemic narratives. Watts attempts to translate the human into what Braidotti would term an "environmentally-bound, bio-genetically constitutive subject" that is a "collective entity" (73), by emphasizing the exchanges—both positive and negative—

that occur between species, environments, and even human and digital interactions. Atwood, too, models a form of posthuman biopolitics, one built on empathy and careful negotiations of community, food, and kin. The rhizomatic exchanges between genes, species, and networks of exchange result in the need to critically examine and overturn anthropocentric norms. Bacigalupi and Lai both comprehensively emphasize the need to explore how our contemporary biogenetics-driven capitalist politics is changing the definition of the human through their *New People* and *Sonia* clones. Along with Atwood, their texts demonstrate how anthropocentric narratives in the age of cloning, gene-splicing, and transgenic patenting leave animals and humans both vulnerable to exploitation—especially persons whose race, class, gender, and sexuality typically push them into the position of bare life.

In examining the biopolitics underlying the posthuman and social interrelations in each narrative and how these authors critically engage with contemporary biopolitical and technoscientific concerns, I have aimed to establish the deeply troubling thanatopolitics that emerge when technoscience is harnessed to capitalism, producing bare life, biomedica, and instrumentalized bio-objects that have value only as producers or products. Reading these works through Agamben's bare life and Esposito's immunitarian politics allows an understanding of how the assemblage and posthuman relationships in each author's works model possibilities for imagining a new vitalist posthuman biopolitics that is built on allowing in the "other" and a re-evaluation of our definitions of life and species boundaries through our interrelations, biological and genetic exchanges, and active resistance to the normalization of life as data. While each author approaches and engages with a posthuman biopolitics to a different extent, this chapter has demonstrated both their illustrations of the problematic instrumentalization of life through biocapitalism and an anthropocentric biogenetic economy, as well as the potential challenges

they offer to such hegemonic narratives. The areas of resistance that form suggest that new biopolitical subjecthoods and identities are required that are embedded, hybrid, and resist the reduction to instrumentalized forms of life. The disruptive and sometimes restorative powers of nonhuman agencies such as the infections are one such example that draws further attention to the ways that nature escapes human containment and resists instrumentalization. Together these works also mutually invite readers to reimagine the biopolitics governing life and species, inviting an awareness of the normalized value judgements we make that demarcate species and their role in biocapitalist economies that seek to create surplus value through both foreclosing on lively potential and interactions and by generating new categories of bare life. All these elements of focus on subjecthoods, species, and embedded politics and their invitation for critical consideration by readers in their open endings suggest a critical turn towards a concept of life that, through its fluid entanglements, is more resistant to divisions that result in designations of disposable or bare life status. Watts, Lai, Bacigalupi, and Atwood all encourage necessary negotiations and deterritorializations of the human/animal *bios/zōē*, subject/object, and culture/nature binaries in their narratives—all changes that will be required to achieve a turn towards a posthuman politics of ecological embeddedness.

4 The PosthumanAnimal: Kin Relationships and Hybrid Identities

Critical posthumanism emphasizes the shared vulnerability and intersections between species as a means of undermining anthropocentrism. In their depictions of nonhuman relationships and entanglements with humans, my chosen works go beyond deconstructing anthropocentric privilege to reflect new modes of being that model negotiated agential interconnections between humans, animals, and nonhuman others. While cyborg technologies still factor into the texts, especially for those from the early 2000s (*Rifters Trilogy* and *Salt Fish Girl*), genetics becomes a dominating theme in all the texts, especially in Bacigalupi's and Atwood's works. As my last chapter demonstrated, genetics is often used to render bare life under biocapitalism; however, it can also connect and help situate new kinships along shared lines of descent and exchanges across species. This chapter examines posthuman bonds and relationships and the extent to which my focal authors' works present multispecies becomings and recognition of the vulnerability and finitude that links us with non-human animals and other living beings as vitally important. Such relations appear not only at the level of bodies themselves but at the shared exchanges across genetics and virtual and social interactions. By foregrounding the agency of other beings, multispecies kinship, shared becomings, and vulnerability, my focal narratives resist the rendering of bare life and biomedica. Doing so also destabilizes nature-culture divisions, orienting readers towards a more connected sense of relationality to other species that may facilitate openness to forms of multispecies community.

Embodiment and new materialist practices generate a space for thinking through the posthuman in my central texts by providing a way to consider the agency of animals and machines. Barad's theorization of agential realism argues for a practice that can account for "the materialization of all bodies—'human' and 'nonhuman'—and the material reality by which their

differential constitutions are marked” (“Posthumanist Performativity”128). Agential realism is posited as a means of taking into account material relations and forms of agency through accounting for the multiple “intra-actions” of bodily production (135)⁴⁹. The ongoing configurations of these interactions enable one to read bodies in a way that recognizes agency in human or sentient actors as well as in non-human and non-sentient ones. Agency, for Barad, is not necessarily bound by the anthropocentric definition of actions made by a free individual. Instead, she defines it as “the ongoing reconfigurings of the world” (135). Barad’s concept of agential realism is quite useful for examining nonhuman agencies in my focal texts, especially the infections in the *Rifters Trilogy* and *The Windup Girl*. Conceptualizing agency in this way resists the privileging of human cognition and the sense of a unified self “I” which lies at the centre of speciesism. It also enables a politics that considers the agencies and interactions between different agents on a more equal ground. Matter, for Barad, emerges out of the ongoing reconfigurations of these boundaries through the intra-actions of material phenomena and apparatuses of bodily production (146). It is, therefore, necessary to examine both the conditions of such production and what new meanings and relations are produced or reproduced.

This concept of emergent meaning and agency is particularly useful for examining nonhuman and virtual life forms such as Watts’s Anemone, Lai’s durian, and Atwood’s pigeons and how they have a significant impact on the shape of events in the narratives through their relationships and interactions with other characters and embodied lifeforms. Nayar suggests, “‘Life’ in posthumanist discourse is discussed as a process of *becoming* through new connections and mergers between species, bodies, functions, and technologies. These connections are not

⁴⁹ Barad uses the term “intra-actions” rather than interactions to refer to the material entanglements that occur among phenomena because the latter assumes a separation of subject and object, whereas intra-action emphasizes that they are already entangled as matter (“Posthuman Performativity” 133).

about transcendence but about embodiment. . . . Human life is about becoming, but a becoming-with other life forms” (30-1). One can see how this becoming emerges out of cyborg theory’s focus on human, animal, and machine hybrids and how it extends into more fluid and ongoing interconnections and becomings. Conceiving of varieties of living and agential becoming through a posthumanist framework enables readers to recognize a destabilization of traditional anthropocentric positioning of humans as the ‘doers’ and animals, machines, and other life forms as the ‘things’ which receive those actions, thus underscoring the important alternate subjecthoods my focal texts provide.

My previous chapter argued that boundary categories of life help enable the reduction and instrumentalization of certain forms of life; here I apply a critical posthuman approach to my focal texts to deterritorialize hegemonic boundary categories through the becomings across species and environments and the potential forms of kinship and possibility they present. To understand the ways these texts undermine traditional forms of anthropocentrism, it helps to know what this critical posthuman entails. In addition to offering conceptions of non-human agency, critical posthumanism “calls for a more inclusive definition of life, and a greater moral-ethical response, and responsibility, to non-human life forms in the age of species blurring and species mixing” (Nayar 101). Cary Wolfe argues we share mortality, vulnerability, and finitude with animals but recognizes the difficulty in approaching these qualities philosophically and ethically (*What is Posthumanism?* 64). Wolfe maintains that what is needed is “a framework for thinking about the problem of subjectivity and species difference in terms of embodiment and multiplicity rather than identity” (*Animal Rites* 169).

Vulnerability becomes important, especially in *The Windup Girl* and the *MaddAddam Trilogy*. In a number of his works on animals, Jacques Derrida suggests a politics of shared

vulnerability, arguing that in terms of thinking through the kinship we share with animals, mortality is the strongest way of conceptualizing it:

Being able to suffer is no longer a power; it is a possibility without power, a possibility of the impossible. Mortality resides there, as the most radical means of thinking the finitude that we share with animals, the mortality that belongs to the very finitude of life, to the experience of compassion, to the possibility of sharing the possibility of this nonpower, the possibility of this impossibility, the anguish of this vulnerability, and the vulnerability of this anguish. (*The Animal* 28)

Derrida's argument suggests that in thinking of the shared qualities of life including vulnerability and finitude, one might locate an approach for an ethical position towards nonhuman life.

Species boundaries enable the institutionalized biopolitical practices of bare life observed previously, removing humans from their own material enmeshment. In addition to positioning humans as superior, the speciesism practiced in my focal narratives discursively naturalizes the control and exploitation of non-human animals which is undermined through their depictions of forms of co-evolution, multispecies-dependencies, and overlaid boundaries—all features Nayar identifies as forms of a critical posthuman practice. (Nayar 96). Interspecies kinship, in particular, becomes a major means of destabilizing anthropocentric and speciesist boundaries and takes a central presence in my focal narratives as they model multiple forms of cross-species, co-evolving relationships. This is especially true for Atwood's *Oryx and Crake*.

Both Bacigalupi's and Atwood's narratives offer close examinations of the way humans and animals co-constitute each-other, modelling forms of "companion species" in both the cheshires and the pigeons⁵⁰. Haraway uses the term "companion species" to examine the

⁵⁰ Haraway argues that "companion species" avoids the species prejudices of "companion animal" since it remains open to "artifacts, organisms, technologies, other humans, etc." (*Cyborgs to Companion Species* 317).

biopolitical and messy intra-actions between humans and other living species as a means to critique anthropocentric narratives that privilege the subjugation of nature. Companion species act as a diverse category of life forms that “make life for humans” (“Cyborgs to Companion Species” 301-2). The term “companion species” also emphasizes the co-constituted relationship between humans and nonhuman species (*Companion Species Manifesto* 12). Thinking companion species helps emphasize the often overlooked, co-evolving, and symbiotic relationship we share with other species. To explore the co-evolving relationships depicted in my texts between species—bacterial, animal, and technological—an embedded and co-constituted approach enables a stronger understanding of the different forms of bonds, dependencies, and exchanges occurring among multiple species in my texts.

Recognizing enmeshed relationships and the dependencies that exist between species also necessitates negotiated responsibilities towards those life forms. Empathy and kinship towards others—human and nonhuman—appear throughout all my authors as two ways to enable a better ecological orientation as they require consideration from an other’s perspective. Nayar suggests that “When we empathize with a suffering other, we respond (not react), seeing ourselves in the victim’s shoes, and this response itself arises from evolutionary processes whereby we have had our consciousness and imitative responses conditioned through embeddedness in a community of several species” (31). Empathy does not mean anthropomorphizing species; it acts as a productive tool in reconsidering the human-animal boundary and “the more difficult work of thinking through the ethics of multispecies community, a community in which some will always be killed by others” (Vint, *Animal Alterity* 80). Thinking through multispecies ethics and community means points of interconnection such as mortality, kinship, and vulnerability become the foundations upon which community might be founded. Watts, Lai, Bacigalupi, and Atwood

present species relationships that are co-evolving and mutually constituted. These posthuman relationships suggest a situated understanding of life is necessary for living in the Anthropocene and challenge readers to re-examine their ethical responsibility to those species in a non-anthropocentric space guided by the principles of empathy and shared vulnerability, and where the human is left irrevocably entangled with nonhuman others.

4.1 Virtual Bonds and Infectious Becomings in Watts's *Rifters Trilogy*:

Watts's trilogy bridges the increasing focus on genetically modified bodies by examining not only genetic exchanges and kinship between biological species but also those across human-virtual connections through cyborg and virtual agents. The *Rifters Trilogy* models an embodied posthuman system of kinship, exchange, and coevolution that produces physical and virtual interdependencies through their interactions. Lenie's interactions with the virtual superorganism Anemone have significant consequences in the narrative. Her co-constituted relationships with Anemone and the Madonna program offer concrete examples of how interspecies relationships are mediated and formed across the boundaries of human and machine through modes of kinship. Virtual interfacing and a sense of kinship become incredibly important to defeating Achilles as Lenie's affinity for the Madonna and her ultimate embracing of it as a part of herself allow it to be rehabilitated into a less-damaging form. In turn, its new orientation aids her and Ken in overcoming Achilles by crashing N'AmNet (the North American Internet).

As with earlier cyborg texts, the *Rifters Trilogy* critiques human tendencies to assume their control of nature through technology. However, it is also critical of the tendency to look at things in isolation rather than situated in a lively environment of interactions. This is demonstrated quite clearly in the Grid Authority's error in selecting the gel to handle the containment of β ehemoth. It had been originally tasked to patrol the flora and fauna of its own

environment. Its kinship relations were established to identify simple versus complex systems in that environment (Watts, *Maelstrom* 16). The gel already had a reinforced bias for simpler systems based on its own virtual evolution and programming (Wall 78). Dr. Rowan and her team had not considered that gels might have such preferences and had assumed it was an impossibility because gels lacked the receptors for emotional experiences (*Maelstrom* 16). Her mistake lies in a failure to consider the agency of the gel and its material conditions. She assumes that the gel would do what it was tasked to do, i.e., burn out thousands—even millions—of lives without hesitation, guilt, or bias in order to prevent β ehemoth from destroying the biosphere (and humans along with it). While Dr. Rowan's actions are an attempted containment to preserve planetary life, her flawed assumption demonstrates a very anthropocentric response, one that perceives the gel as a separate and dislocated entity rather than a co-evolved being that has been shaped by its interrelations with other virtual and physical entities.

The gel's decision to protect β ehemoth blindsides the GA and those involved in its containment since they had not considered the virtual configurations of the 'world' of the gel or how its virtual experiences and conditions might influence its behaviour and decisions. Discussing the necessity of extending agencies to human and nonhuman bodies, Barad argues agential realism resists "thingification" ("Posthumanist Performativity" 130) and, instead, favours a "*causal relationship between specific exclusionary practices embodied as specific material configurations of the world...and specific material phenomena*" (132). In Barad's opinion, it is in the doing of mutual "intra-actions" of agents and modes of material production that enables them to become meaningful. Dr. Rowan's team assumed that the gel would perform the way the humans wanted. This perspective ignores the fact that the gel's interior logic is very alien; it is a cultured tissue neural net that exists in a completely different world-system—one

that is virtual and comprised of data rather than material space. As a result, the gel's lack of conceptual understanding of what the data files "*biosphere*" and "*βehemoth*" materially represent is not considered a point of concern. The gel's choice, however, drastically reshapes the material world, ensuring the spread of *βehemoth* and guaranteeing the deaths of billions of life forms. The gel also ensures Lenie's survival for the simple fact that her name appears in the GA's file on *βehemoth*. Lenie's identification by the GA as a vector ensures her survival as the gel flags her as a "self-sustaining copy of *βehemoth*" to insert into "*biosphere*" (*Star Fish* 275). Such instances in Watts's trilogy draw attention to the complex interrelations between biological and virtual, as well as those often-unnoticed exchanges between material phenomena and actors that drive adaptation and change. Watts's recognition of the significance of the lively interconnections between different life forms and their environments in shaping each other also attests to the ecological orientation of his narrative.

A similar relationship of unexpected co-constitution develops between Lenie and Anemone. Watts introduces Lynn Margulis's concept of symbiogenesis⁵¹ into his narrative to illustrate naturally evolved partnerships between life forms in his narrative. It is first introduced when Sou Hon experiences amazement watching a fish tank containing algae, fish, coral, and anemones, wondering at how it "hadn't even been engineered. It had evolved naturally, a gradual symbiosis spanning millions of years" (25). The evolved partnerships between the sea creatures emphasize the naturally embedded relationships occurring between species. Moreover, Sou Hon's amazement implies an anthropocentric assumption that such relationships would be unlikely unless facilitated by an intelligent agent through technology, as well as the tendency to consider life forms as singular entities rather than lively and entangled parts of a greater

⁵¹ The theory of how eukaryotic life evolved through symbiosis advanced with evidence by Lynn Margulis (Published under Lynn Sagan) in her 1967 paper "On the Origin of Mitosing Cells".

assemblage of other life forms and the environment. Alphonso Lingis argues that human animals are living in “symbiosis” with a multitude of bacterial species as well as “rice, wheat . . . and also the nitrogen-fixing bacteria in the soil . . .” (166). Watts weaves the motif of unexpected and co-constituted partnerships into his narrative, repeating it through Lenie, Behemoth, and Anemone’s virtual entanglements, as well as how Seppuku will function in the material world. In doing so, the infectious politics described in my last chapter returns in the form of the many mutational and co-evolved partnerships that run throughout the *Rifters Trilogy*.

In the case of Anemone and Lenie’s relationship, it evolves through a crossover between Lenie’s real-time experiences and the faster virtual time Anemone experiences in its own Darwinian ‘virtual selection’ as it evolves from meme to digital superorganism. In her work on a posthuman theory of trans-corporeality, Alaimo emphasizes the complexities of material agencies by locating bodies as being materially generated out of a series of interconnections “between human corporeality and the more-than-human” (“Trans-Corporeal” 238). Trans-corporeality argues that human and animal relations are reciprocal, and that understanding nonhuman agency strengthens environmental ethics because it prevents the reduction of agents’ intra-actions to passive resources for human control (249). Watts’s chapters featuring the evolution of Anemone from its simple viral meme roots into ever larger and more complex forms of virtual life offer the reader an understanding of Maelstrom’s digital environment and the program’s agential behaviour and interactions with other entities in it. Lenie’s vengeance-filled travels across North America spreading Behemoth unintentionally drives its evolution contributes to the symbiotic development of the virtual wildlife into “some kind of –Lenie Clarke interdiction network” (*Maelstrom* 345); in turn, Anemone creates a real-time following for Lenie and aids her by tracking and taking actions to protect her while spawning multiple superhuman

legends mythologizing her as the “Meltdown Madonna” and “Mermaid of the Apocalypse” (241), further guaranteeing its evolution and behemoth’s spread. This also conforms to Lingis’s premise that many symbiotic movements are not goal-oriented in the sense of a conscious mind or agent but lead to intense becomings and collisions with others (167-8), underscoring the need to acknowledge the significance of other forms of nonhuman agency.

Through the chapters featuring the viral program’s evolution, it becomes apparent that it has no concept of Lenie Clarke as a human being. Interacting with her benefits the program’s survival and proliferation which, in turn, helps its infection of Maelstrom, since the gels are protecting anything with Lenie’s name or other behemoth-related keywords in the code. The disconnect between the factors driving the program’s ‘choices’ and the reality of the events in Lenie’s world is very apparent in the scene focusing on one of Anemone’s prior forms, 400 Megabytes:

You want to get around fast in Maelstrom, the name you drop is *Lenie Clarke*

400 doesn’t know why this should be. That’s not really the point. What it *does* know is, that particular string of characters gets you in *anywhere*. You can leap from note to note as though disinfectants and firewalls and shark repellants did not exist. (Watts, *Maelstrom* 183)

By writing Lenie’s name into its code, 400 ensures its proliferation in much the same way as behemoth thrives inside Lenie’s body through her acting as a vector and host. This serves to parallel the world of the infection, which is itself working to survive and compete as a bioform. Such parallels draw greater attention to how material enactments of phenomena are produced. Additionally, Watts’s use of vividly physical language to personify 400’s perspective ascribes

more of a sense of agency to it by making it a character rather than a foreign other viewed only from the limited and anthropocentric viewpoint of a human interpreter.

In emphasizing the agency and survival interests of the program as an embodied 'living' virtual entity, Watts models agential enactments of phenomena akin to Barad's assertion that "The world is a dynamic process of intra-activity and materialization in the enactment of determinate causal structures with determinate boundaries, properties, meanings, and patterns of marks on bodies" (*Meeting the Universe* 140) (134). Both the gel and evolving Anemone-program become agents that enact their own boundary demarcations; the gel decides to favour and promote the spread of β ehemoth, while Anemone actively promotes the virtual form of the infection as the Meltdown Madonna or Mermaid of the Apocalypse Lenie meme. In doing so, Watts destabilizes the biopolitical configuring of bodies as biomedica because here the gels and memes are apparatuses and agents, tools humans created, and phenomena enacting their own intra-actions that have effects in both the digital sphere and the physical world.

Barad's theory of posthuman performativity also helps to destabilize the anthropocentric instrumentalism of virtual agents, which tend to be treated as made by and for humans. Agential intra-actions are precise material exchanges that do not necessarily involve human beings ("Posthuman Performativity" 135). Even though they affect humans, Anemone's actions, like the virus, do not directly involve them. In making β ehemoth and Anemone intra-active agents that take part in the generation of meaning and matter in the world, rather than merely passive infection and meme, Watts underscores the complex co-evolving relationships that drive non-human agents. Moreover, by demonstrating how effects in Maelstrom leak into the material world and vice-versa, Watts represents the intricate entanglements of virtual and material production by different human and nonhuman agents. The boundary marking of human and

machine, agent, and non-agent, real and virtual are all blurred in the way that Lenie's infected body also infects Maelstrom, which in turn facilitates Behemoth's infection in the material world. This cycle comes full circle later in *Seppuku* when Lenie has Ricketts reprogram the Meltdown Madonna to return to its symbiotic origins so that instead of attacking everything it encounters, those it infects with the 'Lenie' code recognize each other as kin and cooperatively destroy the virtual boundaries partitioning the North American Internet that assist Achilles (Watts 192).

Watts's inclusion of these distinct virtual entities models both the complex evolutionary interactions and the mutual becomings produced through human and non-human agencies that intersect with and affect each other. Paul Dourish extends the notion of embodiment to include two-sided interactions with computer systems which he terms "embodied interaction," where digital systems equally take advantage of our interactions with them (4). For Dourish, embodiment is not limited to the physical world but is based more on being embedded in reality and having a "participative status" (18-19). In the case of Watts's description of the programs in Maelstrom, not only do they experience a form of distinct virtual embodiment, but one driven by Darwinian fast-paced intra-actions with other virtual denizens and the exterior actions of human agents. Watts's language describing 400Megs's experiences is coded with biological processes that imbue it with both a sense of consciousness and virtually embodied becomings. 400Megs' replicative sexual exchange with an offshoot relative is vividly described as:

But no gene is an island, even in Maelstrom. There's no such thing as an independent locus. Each travels linked to others, little constellations of related traits, junk code, happenstance association. And as 400Megs is about to find out, it isn't just *Lenie Clarke* that matters. It's also the company she keeps.

[...]

400Megs gets *Lenie* Clarke with a whole different circle of friends. Like *doomsday*. Like *meltdown*. Like *bestserved-cold*.

By all appearances, just another unremarkable fuck. But afterward, things start to change for 400Megs. (*Maelstrom* 184-5)

Offering a linguistic structural analysis of Watts's work, Ben Eldridge argues that 400Megs gains subjecthood through naming, making it a "discrete individual" (225). Eldridge is correct that the act of naming anthropomorphizes it and makes it a subject, but I would also argue there is more to it than that. Watts's use of language evokes images of genetic exchange, sexual intercourse, and learning which contributes to giving 400Megs an embodied existence and transforms it from an abstract bit of data into a character with material experiences and goals. It learns and improves in an attempt to further its survival and that of its offspring.

In 400Megs's case, the "fuck" is far from "unremarkable". Watts's passage resists reducing the program to virtual genetic fetishism by depicting that even in a virtual setting, the gene does not stand alone; code is interconnected, exchanged, altered, and constantly mutating due to its becomings with others. Such ongoing descriptions of the metamorphosis of the meme into the assemblage-entity *Anemone* actively resist the biopolitical reduction of life to bare life and genes to bare data by demonstrating one cannot remove such junctures, even in a virtual environment. The intra-actions and phenomena produced by *Anemone* as it grows and develops are equally driven by external material forces as by virtual ones. In turn, *Anemone* bleeds into the physical world, shaping cultural trends and seeding an apocalyptic cult around *Lenie*.

Anemone further breaks the boundaries of virtual and physical by communicating directly with Sou Hon and aiding *Lenie* through digital interfaces such as the bot-fly drones and various other networked surveillance devices that Sou Hon uses to vicariously track *Lenie* (Watts

Maelstrom 289-90). Anemone even uses *Maelstrom* to enlist the aid of human decoys by mobilizing a group of “rifter chic” fans for Lenie to hide amidst when she is being hunted by the containment authorities (259-60). By allowing readers to see Anemone’s actions and interventions in the material world, Watts also characterizes it with a form of embodied intelligence that destabilizes the notion of self-contained subjectivity in the sense that it is diffuse, multiple, and located in a virtual environment of data teeming with programs, gels, virtual wildlife, and firewalls. Nayar observes that rather than independent bounded arrangements, bodies are “congeries” (76). Similarly, Anemone represents a dynamic superorganism multiplicity, subverting the seeming unified human subject as an ‘I’ entity that functions independently of others, thus emphasizing the complex and competing mesh of agential intra-actions and phenomena that compose us as embodied beings.

In addition to Anemone, Lenie’s relationship with its later incarnation, the destructive Meltdown Madonna, becomes a further demonstration of the ongoing transformative exchanges between virtual and physical agents, as well as a destabilization of the autonomous human subject⁵². Rather than being singular and self-contained, Wolfe contends that “the subject is always already multiple” (*Animal Rites* 170). Deleuze and Guattari similarly suggest that the act of becoming animal “always involves a pack, a band, a population, a peopling, in short, a multiplicity” (239). Lenie’s subjecthood is multiplied through the affinity she experiences with the Madonna, identifying it as an extended part of her former rage-filled self and something which “had taken its lead from *her*” (Watts, *Seppuku* 143). Her relationship with it extends her beyond the borders of her body into a series of digital embodiments that parallel the infectious mutational spread of *Behemoth*. Watts demonstrates the ways that the autonomous self is

⁵² The shredders/Madonnas are the ‘devolved’ remnants of Anemone in the post-crash situation of *Maelstrom* after 90% of wildlife has been destroyed in it. See Watts’s explanation of them in *Seppuku* (122).

challenged by interactions between seemingly distinct lifeforms and permeable boundaries of bodies and immunities through Lenie and the intersections of her multiple virtual incarnations with β ehemoth (and later Seppuku). Being is itself mutational and infectious.

Lenie survives, through a ‘multiplicity’ of extended becomings with others including her rifter genetic splices, Anemone, and the Madonnas. Rather than destroy the infectious and highly destructive Meltdown Madonna, Lenie has Ricketts help her “Make Lenie *like* Lenie” (*Seppuku* 192). Doing so restores the Madonna’s ability to recognize kin and, in a sense, a part of herself. Doing so allows the Madonna to recognize those other former fragments of Anemone with “Lenie Clarke” written into their code as kin. Lenie’s multiplicity and connection with the Madonnas render her monstrous, as does the hybrid imagery surrounding her as the “Mermaid of the Apocalypse.” Monsters destabilize the normal, often through their creation via “a process of fragmentation and recombination” that takes parts from other identities, groups or beings (Cohen 11). Monstrosity, according to Graham, denotes “the end of clear delineations, a chaotic mixing and miscegenation of categories” (54). It is also a “strategy which subverts humanist projects, especially when it defies neat categories, or when its meanings disrupt ordered interpretative strategies” (Campbell and Saren 158). While monstrous cyborgs are not new to science fiction, Watts’s narrative is significant for the multiple layers of intra-actions of the organic, mythical, and viral forms that Lenie’s monstrous identity takes through her becomings as a cyborg, infectious ‘mother’ for β ehemoth, the mythical mermaid of the apocalypse, and a virtual form of malware that shreds any code—even others of its own kind. Watts brings about a composite that reveals the multiple entanglements and assemblages that interconnect to form the self along lines of genetics, code, bacteria, and the body.

Her hybridity is further underscored by her embracing and seeking to restore the Lenies/Madonnas. Lenie's kinship with her virtual 'selves' destabilizes an autonomous-human subject identity through the physical and digital interfaces with other kin-entities. Additionally, her acceptance of it can be figured as a form of "becoming machine" in the vitalist sense posited by both Deleuze and Guattari and Rosi Braidotti, where the subject that has "become machine" has a bond that extends and transforms with numerous others including the technologically mediated global environment (Braidotti, *Posthumanism* 92). Lenie recognizes that, perversely, the Madonnas are a reflection of who she had been during the events of *Maelstrom* (Watts, *Seppuku* 143). When Taka recognizes Lenie as the face of the Madonnas, she acknowledges in her thoughts that "They were the very essence of the rage and hatred that had driven her, the utter indifference to any loss but her own" (134). Lenie's acceptance of the Madonna as a part of herself is important in showing how kinship relations can better situate the self in terms of an assemblage with animal and virtual connections.

4.1.1 Infectious Potentialities: Changing the Human from the Inside Out

The motif of infection littering Watts's trilogy is significant in underscoring human attempts to assert anthropocentric preference through strict boundaries. In explaining their concept of becoming-animal, Deleuze and Guattari suggest that humans naturally oppose "epidemic to filiation, contagion to heredity, peopling by contagion to sexual reproduction" (241), thus suggesting a fear of the multiple over the more biopolitically controlled forces because "contagion" and "epidemic" are multiplicities and can only be understood in their relationships in terms of becoming rather than production or descent (242). For Deleuze and Guattari, contagion plays a significant role in becoming; they argue humans may influence their "becoming animal" by entering assemblages (242), and that contagion is connected to

cooperation by affiliating it with forms of alliance and treaty (246-7). In the *Rifters Trilogy*, Lenie's becoming-animal includes contagion along with forms of alliance that are created through contaminations of border-zones. She carries β ehemoth and is unwittingly influencing Anemone while it infects Maelstrom with viral versions of her. As agential beings, Lenie, the Madonnas, and β ehemoth all enact exchanges and becomings with each other, as well as with other life forms and matter.

Lenie also uses infection to restore the Madonnas' cooperative capacity. Lenie's and Ricketts's change to the Madonna they isolate aims to reset the program, returning it to a less destructive form of itself (192). Their tweak undoes the aggression the Madonna has towards its own kin, allowing it to form alliances and help bring about forms of becomings through infecting the other Madonnas with the new code, engaging in transformative new alliances that enable millions of them to converge on N'AmNet⁵³ as a mighty legion where "Now they are united. Now, they are cooperating. And now they are *here*, drawn by a common instinctive certainty built into their very genes: the higher the walls, the more important it is to destroy the things inside" (Watts, *Seppuku* 198). The infection of the Madonnas is restorative and signals both the potential of such infectious becomings that Deleuze and Guattari refer to and those of networked multiplicities. The Madonnas are united by the counter-infection of the new code, allowing them to disrupt Achilles's controls over the virtual systems. Each Madonna is a threatening multiplicity of code but acting together as one assemblage, they possess vast transformative power in the virtual ecosystem.

In critical posthumanism, the human "always emerges in multiple encounters, relations and transverse connections of vitality with what it deems not-human" (Nayar 32). In a similar

⁵³ The North American Internet that was partitioned off during the β ehemoth pandemic.

manner to the Madonnas' destructive presence on the internet, Lenie spreads β ehemoth throughout the continent, devastating countless lives and ecologies. The only form of restoration in both cases is by forming new kin relations and performing a form of immunization against thanatopolitical destruction in the form of opening the subject to others/forms of posthuman community. For Lenie, who begins the narrative as an anti-social, self-destructive rifter, this includes alliances with the Seppuku infection, the Madonnas, and other humans. Her idea to 'infect' the Madonna with new code changes it and reopens it to forms of community, paralleling the Seppuku-infected culture she gave to Ricketts that through its infection, immunizes him against β ehemoth and its more virulent form, β -Max. In both instances, the extension of kin and self through viral and coded becomings destabilize nature/culture and human/animal/machine boundaries by forming new interconnections and symbiotic partnerships.

To understand the significance of these viral transformations, a posthumanist lens is necessary. In Watts's narrative, Taka's conception of the end-result of Seppuku is "the end of Life As We Knew It. The beginning of Life As We Don't" (*Seppuku* 244). This sentiment offers an open possibility—one that deanthropocentrizes the fixation of thriving at all costs. It is the anthropocentric obsession with human conquest that resulted in death from burns and containment, as well as the tweaked infections. Watts's trilogy—while often positioned by many as being depressing, misanthropic, and oppressively dystopic, is something he claims is a gross mischaracterization (Watts, "Outtro" 217-18). From a humanist lens, his work is most certainly depressing. As Watts has recently commented in a blog post regarding a futurist workshop, "When your life has been spent putting people front and center...is it any wonder at all that you might want to look away from a scenario in which Humans get what they deserve? Everyone in this room is looking for a desirable future. I may be the only one who defines that as a future

without us” (“The Gong Show”). Watts’s “future without us” scenario is distinctly posthuman and is reflected in his writing which offers a relatively hopeful vision in the sense that life and its potential becomings will continue evolving after us—and that in the grand scale of evolution, even if Seppuku wiped the planet of humanity in its prospective mutations, something—or several things—would live on to form new transformative assemblages. This position is perhaps most jarring because it does not consider human survival, yet that is what also makes it so vitally important in reorienting the reader to consider ecological intersections and multispecies potentialities outside the totalizing anthropocentric gaze. Human survival is not the only thing of value, especially if it comes at the extinction of most of the biosphere.

The *Rifters Trilogy* reorients the reader away from anthropocentrism, in part, by stressing that the things that may stop the destruction of the biosphere by β ehemoth and β -Max will not be purely achieved by humans—despite them certainly being the initial cause of the disaster. Instead, it is achieved by many agential intra-actions between humans, machine entities, bacteria, and—ultimately—what final becomings and survival potential are left open to the prospective new liaisons and exchanges between the viral codes introduced by Seppuku into all eukaryotic cellular life. Seppuku, like the new Madonnas, works through infection to form new partnerships. The lifeforms that survive its infection will live with a new symbiotic organism embedded in their cells that may ensure enough of the biosphere survives to regenerate anew.

Taka realizes Seppuku’s function is indicative of the new kinship and complete transformation achieved through its symbiotic insertion into every eukaryotic cell to render them impervious to β -Max and β ehemoth. Seppuku is offering a means of “life within life” (Watts, *Seppuku* 240). Much like the old merger of proto-eukaryotic cells with mitochondria that happened around a billion years ago, Seppuku introduces a form of “endosymbiosis” where “all

those redundant genes could code for any number of viral organisms . . . Seppuku not only killed itself off when its job was done—it gave birth to a *new* symbiont, a viral one probably, that would take up residence in the host cell” (241). Seppuku’s potential to salvage some vestige of the biosphere also opens an unimagined future possibility. It introduces new symbiotic parts into the cells it infects, preventing *β*ehemoth by completely retrofitting life from the inside (241). Taka ponders this unpredictable new becoming, thinking: “How many carefully-selected experimental treatments would it take to model a billion simultaneous mutations? Seppuku—whatever Seppuku was poised to become—threw the very concept of a *controlled experiment* out the window” (Watts, *Seppuku* 243). This leads her to express the hope that “And maybe it wouldn’t fail. Maybe everything would change for the better” (243). Despite the uncertain and somewhat bleak outlook presented in the *Rifters Trilogy*, Seppuku’s kinship offers an easily overlooked sliver of optimism by offering a way to rethink forms of ecological survival. Having a strong awareness of nonhuman agencies is beneficial in bringing about an “environmental ethics of partnership” (Alaimo, “Trans-Corporeal” 245). The *Rifters Trilogy* attempts to catalyze such a partnership by showing the potential of such kinship exchanges—not just ones that benefit humans but also those that may be mutually beneficial on a greater ecological level. To reorient readers towards an ecological consciousness, *Rifters* suggests the human must become infected with understandings of cross-species kinship and negotiated community with nonhuman others.

As a former biologist, Watts has expressed increasing ecological concerns regarding global human impact⁵⁴. While the *Rifters Trilogy* was completed more than a decade before the recent damning projections of our current climate crisis, it is not a far stretch to interpret the language of infection and the need to change at the very genetic level to be speaking to humanity. Both

⁵⁴ See Watts’s October 2, 2018 blog post “The Adorable Optimism of the IPCC”.

Watts and Atwood feature genetic alterations of human beings. While Atwood's *Crakers* are explicitly designed to be ecologically benign, what might emerge in *Seppuku*'s wake is left for Taka to merely speculate: "There would be monsters, some hopeful. . . . Maybe people would change from the inside out, the old breed gone, replaced by something that looked the same but acted *better*" (*Seppuku* 243). The human 'virus' parallels with behemoth in our destructive burning up of the biosphere. *Seppuku* potentially carries the restorative code for rewriting not just the human species, but all species into symbiotic partnership. This is not to say that such partnerships do not involve risks or potential dangers. However, Watts's resistance to optimism and certainty is just as important since it forces readers to experience that discomfort and denies them any return to the assurance that everything will be fine. I contend though that while what *Seppuku* offers is far from any utopic guarantee, on a symbolic level, its potential for restorative new becomings and posthuman survival suggests that what defines the human must become infected with cross-species kinship and redesigned from the inside out in order to be open to multispecies partnerships.

While Watts's trilogy ends with a far more ecologically dire and unstable world than where it began, it is also grossly depopulated by humans. This leaves a point of opening for new kinships to form in both the virtual and physical spaces left behind. Yet, as Deleuze and Guattari note, the forming of assemblages and multiplicities does not guarantee a Utopic possibility; the politics of becoming-animal is always "extremely ambiguous" (277). With this in mind, Watts's short epilogue concludes his trilogy reading: "FAILURE TO CONVERGE. CONFIDENCE LIMITS EXCEEDED. FURTHER PREDICTIONS UNRELIABLE" (*Seppuku* 287) is open to limited optimism in its denial of closure. The calculation implies an algorithmic model that has failed to determine the outcome. The projected future for humans and the biosphere is no longer

predictable. At the same time, neither survival nor annihilation is assured. New becomings and kin alliances forged through cross-species contamination, kinship, and a certain level of empathy for non-human animals and machinic entities prevent its foreclosure.

4.2 Contaminating the “Human”: Transgenic Bonds in *Salt Fish Girl*

Writing in the early nineties, feminist and animal studies theorist Lynda Birke pointedly asked why science is so focused on maintaining the human-animal division by denying animal consciousness (6). Unfortunately, new levels of kinship enabled by genome mapping still support ongoing attempts to separate humans from other species. In *Salt Fish Girl*, Lai pointedly challenges technoscience’s human-animal separation, underscoring the way biogenetic reduction is employed to further that separation under biocapitalist economies for the sake of profit. Lai offers a detailed meditation on how the bare life discussed in my previous chapter is facilitated through binary divisions such as the human-animal boundary and genetics. Her text suggests the need of challenging such demarcations that enable capitalist and corporate scientific exploitation through forms connecting with the non-human histories and ecologies to which we belong.

Salt Fish Girl opens with the goddess Nu Wa creating people from the wet primordial mud. Nu Wa is a hybrid being, part serpent, and part humanoid (2). Her body denotes humanity’s early evolutionary stages and her act of splitting humanity’s tails in this creation narrative takes on multiple levels of significance. Lai’s introductory chapter is called “The Bifurcation” (1), alluding to the splitting of humanity’s tails into legs and the twofold path of the narrative itself, as well as to the coiled double helix of DNA, species divisions, and the many categorical distinctions that biopolitically separate humans from nature, animals, and machines. Regarding the creation story, Mansbridge observes “key conception scenes or tropes suggest that origins are divergent, reiterative, and multiple” adding that “the possibility of imagining a creation story

outside of the Judeo-Christian tradition is a fundamental aspect of reconstructing identities beyond the limitations of binaries and abjection” (123). Lai certainly blends origin and creation stories; however, Nu Wa’s creation scene includes an additional connection between people and their material origin: muck. They are made from the mud itself—but mud that is far from pristine. Its sulfuric smell of “rotten eggs” implies it is already organically inhabited by some form of bacteria—an idea further supported by the presence of the giant fish with “eyes older than the world” (*Salt Fish girl* 8). This fish may have pre-existed Nu Wa, despite her contradictory claim otherwise (Reimer, “Troubling Origins” 8). Such inconsistencies establish the theme of tangled and multiple origins which Lai interweaves throughout her narrative alongside the ideas of hybridity and material connections to a shared primordial origin often overlooked in anthropocentric modes of thought. Despite the goals of the Human Genome Project to produce a genetic map of a human being and capture its uniqueness, ‘human’ DNA is outnumbered by that of other life forms in our bodies by a ratio of 10:1 (Fishel 14). We are connected to other species at the level of genetics—no matter how disparate they are in appearance.

Troubling the notion of a uniquely human genetic code is important to how Lai’s text undermines the technoscientific biopolitics of bare life. Evie’s separation from the category of human because of her .03% freshwater carp DNA generates an absurd distinction in terms of the denial of her humanity/personhood (*Salt Fish Girl* 158). It also erases her status as a biological organism, transforming her into patented transgenic property. The laws that allow Evie to be denied human status highlight the superficial speciesist boundaries that have been enacted to exploit the Sonia and Miyako clones by attempting to inaccurately define humans as a special ‘genetically pure’ category. Forcing Evie and the Sonias into nonhuman classification models the

danger of using genetics to erect boundaries between species for biopolitical legal enfranchisement or categorization as biological property.

The roles that consumption of the durian plays in the Sonias' reproductive control and Miranda's complex origin story further show an example of entangled relationships between lifeforms. The durian becomes both a source of sustenance and a connection to material cultural memory. Its asexual reproductive powers belie the hybrid interconnections as having been created for human co-production, acting through it being both a fertility agent and food for the Sonias and by means of its consumption which results in the integration of self and other at a genetic and figurative level. Miranda recounts that she had never eaten a durian until Evie offers her some because "I had always thought there was something cannibalistic about eating it, and so I never had . . . I scooped the creamy yellow flesh into my mouth, felt its taste and odour merge with my own. It gave me a very peculiar sensation, as though I'd bitten my own tongue" (Lai, *Salt Fish Girl* 224). Eating the durian is to some extent a form of auto-cannibalism for Miranda; the Durian is likely from the same genetically unregulated tree her mother ate from before becoming pregnant with her. Beyond her durian smell and the fleshy descriptions of the fruit, the clear merger of durian with Miranda's self becomes a form of self-integration, enabling new self-knowledge and a connection to her genetic and cultural heritage.

Moreover, the durian fruit and its fecundity destabilize attempts to maintain the 'purity' of the borders of who and what we form kin bonds with as a form of anthropocentric and capitalist control. Haraway acknowledges that "Cross-species kinship has consequences" (*Staying with the Trouble* 106) and one can see how unregulated fertility could become a problem—environmentally and for those who do not desire a child. However, the durian-Sonia kinship is presented affirmatively; cultivating the transgenic fruit allows the Sonias a means of

controlling their fertility and the birthing of a generation of Dora daughters born free of the factories and their implanted devices to control their bodies and behaviour. The fruit also facilitates “the creation of a body that asserts ownership over itself through an act of self-production” (T. Lee 108). As mentioned in my prior chapter, the Sonias’ cross-species kinship with their cultivated transgenic crops represents a queer futurity in liberating them from the necessity of heterosexual reproduction (P. Lai 174). Deviating from such norms reveals the potentials of multispecies kin relations while also recognizing those that already exist. While *The Windup Girl* presents a more negative potential in cross-species kinship where genetic cross-pollination is out of control, *Salt Fish Girl* draws attention to modes of reclaiming technoscience that can be liberating by connecting the bodily agency of women of colour with chosen posthuman kinships, exchanges, and transformations.

Lai’s durian serves a further role as an agent in material enmeshment by connecting Miranda to Nu Wa—and by extension, Evie—giving her multiple origins shared with distinct other entities through her material history. Using Barad’s concept of agential intra-actions helps to reveal the significance of the scene of Nu Wa’s merger with the durian. Matter occupies an “agential” role in iterating itself in the material world (“Posthuman Performativity” 143). Changes in bodily production create agency through intra-actions which can even redefine the boundaries that define the human (144). When Nu Wa merges with the durian, it is one of mutual agential transformation. She shrinks and crawls into a bud, coils around its centre, and dreams of the flower growing and encasing her inside a womb-like and protective shell that is “leather-hard and spiky on the outside, but on the inside smooth, veined and sticky moist” (Lai *Salt Fish Girl* 208). Then, shortly before Miranda’s mother espies the durian fruit, Nu Wa recounts that

“The yellow flesh sweated, effused scent. In my tight grip, something inside the seed seemed to stir. I felt a slight, momentary vibration. Though I held the heart of the fruit, the fruit held me. Its strange acids worked at my flesh in a way that discomfited me. . . . I became the seed and the seed became me. Whatever grows from it will be mine” (209). The seed’s pulsing and acidic erosion of her skin with its juices as it grows around her so that they mutually become each other illustrates a form of material exchange and emphasizes the vital liveliness of the durian and its role in creation, one that is contributed to by Nu Wa. Lai’s phrasing makes the seed an active agent in this exchange, not a passive object/tool that Nu Wa uses to allow herself to be reborn. Nu Wa even chooses open futurity for her reincarnation by accepting that whatever eats the seed will take her into them and become with her as well.

In this active consumption and transformation of Nu Wa with the spiky durian fruit, there is a further embracing of monstrous others. Describing monstrous plants in science fiction, McQuiston observes that they are often cast in the same sort of role as monster animals and aliens: that of the “other” (178). As transgenic ‘Frankenfood,’ the durians are considered monstrous by Dr. Flowers; they are even described with a grotesque appearance, one that connects them to animals—especially reptiles—through descriptions such as “those dark reptilian fruits” (Lai, *Salt Fish Girl* 87), and “greenish-gold bodies covered in spikes, distinctly lizard-like. Different from the durians that had passed, over the years, through our family store, these ones flushed pink at the ends of their spikes. It was as though blood flowed from the inside to the pointed tips, as it appeared to in the leaves” (221). Paul Lai argues that these reptilian descriptions give the durians a “startling animal characteristic that disrupts animal-plant boundaries and connotes reptilian alienness, evolutionary primitiveness, and deception,” adding that the “bloodless organs” depict the fruit specifically as a living body/entity, rather than a mere

object of consumption (179). I would add that *Salt Fish Girl's* emphasis on the durian's animality and primordial nature also stresses the vital presence of plants as more-than-objects, drawing attention to their shared embodied histories with humans and animals. Linking the durian back to the text's characters, Elizabeth C. Harmer argues the hopeful potentiality of linking Nu Wa, Miranda, and Evie in that "All three are linked by the durian fruit, which has helped to transgress human-plant boundaries, because of its effect on human reproduction" (3). Forming such connections between human, animal history, and plants in Lai's work erodes body/self boundaries and resituates the human within a complex network of nonhuman life that contributes to both its survival and sustained material and historical orientations.

4.2.1 Cyborgian destabilizations and Contaminating Bodies

Reading the clones, Nu Wa, and Miranda as posthumanist cyborgs in the sense of their multiplicities and confusion of origins means they expose "the instability and ambiguity of categories of gender, sexuality and radicalized subjectivities" (Mansbridge 129). Evie's rejection of her human status in *Salt Fish Girl* (Lai, 158) certainly reflects an acceptance of a cyborg identity that is open to other forms of definition and kin relations. Explaining not all the clones are passive, she suggests it is "the fish" DNA that "was the unstable factor" (159). However, Evie and Nu Wa do more than just resist normative binaries. Posthumanism's stance on otherness acknowledges "we *are* Others, and therefore the human intolerance of the Other's difference...is not simply untenable but also unethical since we have evolved *with*, and live because of, these 'others'" (Nayar 47-48). As a clone, Evie expressly embodies an invisible otherness; she is created in a human image yet is genetically (and by her being a clone) denied human status. The derivative form of human clones makes them disruptive to "our sense of species self" making it "difficult to perceive them as human" (Nayar 60). Evie's independence

and strong personality as a clone greatly disrupt the unified human subject and the divisions that privilege human life at the expense of nonhuman life.

Evie's confrontation with her stepfather Dr. Flowers is one of the moments that best represent the horrific necro-political nature of the human-animal boundaries enshrined by corporate science, as well as how she destabilizes them. When she confronts him about it, he goes to great lengths to deny the humanity of the murdered Sonias. He justifies his ordering their execution by referring to them as "degenerate," suggesting they were going to birth monstrosities and that they were "not human" (255-6). While Dr. Flowers attempts to placate Evie by suggesting she is not like them—as if offering her temporary human citizenship—she angrily rejects his suggestion; she identifies them as her kin, thus embracing a non-human status by reminding Flowers, "You got rid of me. You put me back in the factories. I am not your daughter any more. I am the same as them. How could you. . ." (255). While Dr. Flowers paints the Sonias as corrupt and inhuman, it is he who appears monstrous for ordering their execution. Evie's rejection goes beyond connecting her with her clone Sonia 'sisters,' it also recognizes her embracing of a non-human status and a rejection of human citizenship. Braidotti's posthuman politics argues for a non-anthropocentric turn towards embracing a form of "*Zoe*-egalitarianism" that seeks to cut through species categories to resist both the "trans-species commodification of Life by advanced capitalism" and resist the anthropocentric distinction traditionally granted to human life (*Posthuman Knowledge* 144). I suggest Evie demonstrates a movement towards a form of *Zoe*-based politics through her embracing of a nonhuman status over a human one.

Evie's rejection and embracing of alternate forms of kin through her fellow clones, the durian, carp 'mother', and her hybrid scaled entanglement with Miranda/Nu Wa at the end of the text all contribute to modelling ways in which we might rethink kinship through interrogating

traditional origin stories meant to culturally construct concepts of kin and other, as well as by forging new ones that allow for more open and multiple possibilities. According to Sonja Georgi, Lai's cyborgs are "individuals who resist identification in terms of the normative categories human/non-human" (162). The proliferation of the Miyako and Sonia clones presents a merging of clone and human that challenges the boundaries of otherness and a presumed understanding of the human. Miranda's complex intersections of human and nonhuman origins further deconstruct the boundaries through the ongoing inter-connected becomings reflected in her mother's questionable 'human' status and the possibility that she is a clone of her mother. Like Miranda, her mother had the token hereditary fistula many of the Sonia clones have that marks her as a possible carrier of the dreaming sickness (Lai, *Salt Fish Girl* 108, 102-3). Additionally, Miranda's origin appears to stem from wild genetic technology (the durian), and her being born/reincarnated from Nu Wa. By layering these multiple, 'fishy,' and contradictory origins together, Lai situates identity as an assemblage of multiple origins. Just as Nayar urges that the self must be perceived as "multiple, fragmented, and made of the foreign" (63), readers are encouraged to contemplate the possibilities of an assemblage concept of a posthuman self that intersects with other species, creatures, lifeforms, and the environment.

Furthering these interrelations, *Salt Fish Girl* is full of scents, stink, and references to muck, fluids, putrid leakings, and morphings of bodies. Beyond muddied origins offering a sense of hybridity, the smells that emanate off the bodies of various characters in the text connect them with ancient kin. This is especially true for those who, like Evie and Miranda, are afflicted with the dreaming disease. Female bodies are culturally construed in Western paradigms as "out of control, uncontained, unpredictable, leaky: they are in short monstrous" (Shildrick, "Posthumanism" 3). It is no mistake, then, that both the clone/cyborg bodies in Lai and

Bacigalupi's novels are female because women have a history of being animalized and rendered Other and monstrous. Miranda's body, with its durian stink and fluid-filled fistulas, acts as "a persistent reminder of her abject origins" (Mansbridge 124). Paul Lai observes that her smell, described as an "unpleasant cat pee odour" (Lai, *Salt Fish Girl* 16), becomes something that connects her more with cats than humans through the taunts she receives at school (180). *Salt Fish Girl's* leaky and monstrous bodies (gendered, othered, and racialized) disrupt the stringent patriarchal Western anthropocentrism that aims to contain and root out the 'stench' of our muddy and developing symbiogenetic relations in order to maintain a strict, controlled, and 'pure' human that exists outside of 'Nature'.

The theme of the perceived monstrosity in connection with posthuman hybrid bodies appears in various forms in all my focal texts; however, *Salt Fish Girl* embraces monstrosity on a literal and figurative level. Enlightenment ideas regarding the purity of human bodies are disrupted through the aberrant bodies of her characters (Reimer, "Troubling Origins" 8). Grosz contends that defining ability of bodies is that they "always extend the frameworks which attempt to contain them, to seep beyond the domains of control" (Grosz, *Volatile Bodies* xi). Evie and Miranda's hybrid becomings extend themselves across time, bodies, and identities. Morris and Villegas-López suggest that the liminal hybridity and monstrosity of clones like Evie critiques the masculine anthropocentric image of humanity and the instrumentalization of technoscience by corporate male figures (92), (36). Both Evie and Miranda embody forms of monstrous difference through their multiple positions that blend human with clone, cyborg, goddess, fish, disease, and even fruit, infiltrating and contaminating these categories. Identifying monsters with penetrating boundaries and polluting behaviour in its cultural construction, Michael Uebel suggests "the monster becomes joined to the 'human', constituting its limits and haunting those

borders as the persistent possibility of their transgression and unmaking” (267). As a novel that is full of muddy contaminations and hybrids, *Salt Fish Girl* pollutes the erected borders of the human subject by embracing these forms of multiplicity and otherness. Opening one’s self to the entanglements of kin relations and material history can be both liberating and a moment of redefinition that shifts the self into a more embedded understanding of the world and life. Thus, Evie and Miranda’s complicated origins resituate humans into their own murky entangled identities by demonstrating the mutual seepage of bodies.

4.2.2 Infectious Kinships:

Despite Miranda and Evie’s cyborg origins, *Salt Fish Girl* takes great lengths to recognize differences alongside kinship. It is important to remain “grounded carefully on materially embedded differential perspectives” to facilitate a multitude of approaches and diversity (Barad, *Posthuman Knowledge* 257). Each Sonia has her own personality and experiences, and they speak a hybrid language consisting of “a smattering of Chinese, a few words of Spanish, some French, some English” (222). This recognition of difference and otherness in a way that resists erasure, despite the many forms of multiplicity and becoming, is important for negotiating exchanges with nonhuman animals. During an encounter Miranda has with an octopus in the aquarium, she recognizes in it an otherness/difference in its experiences that is unreachable. In contrast to the sign noting the similar construction of octopus and human eyes, she expresses that “Their eyes are so different from ours. I can’t tell what they feel” (262). Miranda recognizes the octopus’s embodied otherness without denying its capacity to feel or rendering it monstrous, thus presenting an imperative aspect of a critical posthuman politics, one which is also necessary for community and the formation of kinship that recognizes vulnerability.

In her more recent work, Haraway urges a viral form of infectious “response-ability” towards multispecies relationships and practices so that they might successfully spread (*Staying with the Trouble* 114). She acknowledges that this notion of contagion and virality is already a part of multispecies relationships because “Companion species infect each other all the time. Bodily ethical and political obligations are infections, or they should be” (29). I find this argument especially interesting in light of the recurring motifs of infection, hybridity, and mutation that occur in my focal narratives. As previously mentioned, all my core texts might be thought of as ‘infection narratives’ in certain contexts. While Watts, Bacigalupi, and Atwood present infections killing across multispecies divides and decimating humans, Watts’s and Lai’s narratives also instill a more complex significance to their use of infection. The tangled interactions they depict offer examples of their embracing of an ethics of change and exchange across materialities (and virtualities) through Lenie’s juxtaposition with physical and virtual infection, Seppuku’s potential as a restorative infection, and infection as material grounding in the case of the dreaming sickness. Miranda learns that the dreaming sickness is theorized to be the result of genetic contamination in the soil caused by “microbes that lived in the earth once only possible in plants, or that indeed, the new disease was a strange hybrid, combining those that affected plants, and those that affected animals” (Lai, *Salt Fish Girl* 102). It is also believed to be a disease granting “memory structures of other animals” (103). The dreaming sickness might then be thought of as a means of infecting others with the material memories of the past and shared animal memories of multispecies entanglements by connecting the earth, foods, and waters in which we co-inhabit and interact. Scents in Lai’s narrative are indicative of the memories evoked in the dreams and “become persistent, excessive, bodily reminders of the past” (P. Lai 182). In obscuring the boundaries “between the smeller and the smelled through

processes of molecular bonding” (183), *Salt Fish Girl* also models agential interactions in the form of this material exchange. In this sense, even the scents that mark those with the dreaming sickness enact intra-actions that connect and permeate bodies and memories, further connecting people without direct physical contact.

While analyzing Jeff VanderMeer’s *The Southern Reach Trilogy*, Alison Sperling argues that weird fiction centred on the environment reacts to the Anthropocene through a “radical reframing of normative accounts of the body” and suggests ecological sickness is emerging as a norm (216). While *Salt Fish Girl* is not weird fiction, Lai’s use of the dreaming disease demonstrates a similar pattern in how it transforms the embodied experiences of those infected and reflects a new ecological reality for a biotechnologically polluted and globally warmed earth. As a memory disease, the infection also breaks the boundary between species and environments due to its originating from pollution and genetic manipulation. In turn, it further pollutes the Cartesian division of mind and body (Villegas-López 31). The memories come through the soil and into the body’s mind via the infection. Sperling contends that sickness produces “environmental consciousness” (221), something that *Salt Fish Girl* text also models in its emphasis on the permeability of the divisions of self and other. Kathryn Allen suggests that “Lai figures bodies as permeable, and therefore inherently vulnerable to contagion” (60). This exacerbation of vulnerability is emphasized by the dreaming disease which invisibly inhabits the soil as a form of genetic contamination that penetrates bodies and the individual subject by instilling infected persons with memories that originate outside themselves.

That the dreaming sickness enters the body through the soil is also significant in light of Sperling’s argument that, rather than binding bodies into separate contained individuals, the skin in the *Southern Reach Trilogy* is presented as the “most vulnerable and open system of the body

in its relation to the nonhuman environment as well as to others” (226). I feel this is particularly significant in Lai’s narrative in its demonstration of the shared vulnerability of bodies inhabiting the environment colonized by technoscience. “Technology,” in *Salt Fish Girl*, “transgresses corporeal boundaries and exacerbates the vulnerability of bodies” (Allen 67). However, with the real and figurative levels of contamination, permeability, and bodies in the text, openness to such infection might be necessary to turn away from oppressive obsessions with purity and the belief that humanity is a separate and inherently more valuable life form. Lai’s dreaming disease seeps into the skin, infecting the individual with a unique odour and memories that collapse the boundaries of the human cultural body, nonhuman others, and the environment. For Paul Lai, *Salt Fish Girl* draws connections of kinship on multiple levels where its “Alien/Asian figures create webs of queer kinship that deny easy notions of progress” and which emphasizes the necessity of human coexistence with other lifeforms in the environmental assemblage we all inhabit (184). This includes the dreaming sickness, which affects humans in a similar way to Sperling’s assertions that sickness and its effects uncover the ways that humans are “co-constituted” by nonhuman others and the world surrounding them (221). As a soil-based infection, the dreaming sickness’s integrations of scents and memories into the person disrupt the purity of the human self, thus agentially playing an important role in drawing attention to the many embodied and leaky intra-actions with multispecies kin we have in our day-to-day lives.

4.3 And Say the Cheshire Responded? Entanglements in Bacigalupi’s *The Windup Girl*

Much like the treatment of the Sonias in *Salt Fish Girl*, as a New Person, Emiko is an example of what Wolfe terms “*animalized humans*” (*Animal Rites* 101); her posthuman status is used to justify horrific abuse and a lack of empathy towards her. Like the cheshires, Emiko occupies a dual identity as a desired object and detested piece of ‘genetic trash.’ Discussing the

long history of shared interactions between pigeons and humans, Haraway reminds us that among other things, pigeons are a creature of imperialism—one of many animal species that were introduced around the world by European colonists where they altered “ecologies and politics for everybody in ways that still ramify through multispecies flesh and contested landscapes” (*Staying with the Trouble* 15). Emiko and the cheshires are both imagined forms of biogenetic imperialism; the Thai view gene-hacked beings like them as invasive species symbolic of Western globalization and biogenetic warfare. The cheshires have especially transformed the local ecology, out-competing other cats, and decimating local bird species (Bacigalupi 114). Both Emiko’s and the cheshires’ status as unnatural animals open important discussions regarding how embodied forms of vulnerability and recognition of suffering might overcome the seeming naturalness of these constructed categories. *The Windup Girl’s* mix of invasive species and infections alongside vulnerable posthuman characters and creatures merely seeking to survive also draws attention to the importance of carefully negotiating forms of multispecies community and acknowledging nonhuman agency and lively becomings in order to sustain communities and ecosystems.

Unlike the Thai and Western calorie/agricultural company agents, Emiko is fond of the Cheshires (113). Hageman cites Derrida’s argument that the challenge of the hospitality of being is to welcome the other/alterity without prejudice in his identification of Emiko and Gibbons as the only characters who extend it to the cheshires (296). Emiko shares a kinship with them as a fellow outsider created by the genehackers: “she and it are siblings. Sympathetic creatures, manufactured by the same flawed gods” (346). While other characters kill them or try to drive them away, Emiko welcomes the cheshires into her company, admiring them because “They are too much improved for this world” (114). Emiko shares with the cheshires the experiences of

being hated and treated as soulless for having been made instead of born. She also believes that New People might not have been created sterile if the cheshires had not been created first and taught genehackers the dangers of creating a fertile species with a competitive edge (114). Haraway's example of the pigeon informs a reading of the cheshires in their initial design to be human pets. Humans have had a polarising relationship with pigeons as a companion species; they occupy spaces of "treasured kin and despised pests, subjects of rescue and of invective, bearers of rights and components of the animal-machine, food and neighbor, targets of extermination and of biotechnological breeding and multiplication, companions in work and play and carriers of disease" (*Staying with the Trouble* 15). As cats, the cheshires further emphasize this polarized position as an animal that is often a valued part of the family, companion, worker, and kin but also a destructive nuisance when wild, resulting in a risk to local songbirds, carriers of diseases, and invasive threats to already established ecologies. The cheshire's ability to perfectly camouflage itself makes it incredibly harmful to ecosystems, resulting in it being deemed a nuisance rather than a companion animal.

Cheshires are present in many scenes in the text, including one that curls up on Anderson's bed as he nears death (Bacigalupi 347). Like Derrida's cat in *The Animal That Therefore I Am*, the cheshire's gaze functions "as a kind of gaze that human beings can feel. But, unlike Derrida's cat...the cheshires are ever-present, and their unceasing gaze is a relentless reminder of their existence for which people are partly responsible and which they are unable to control" (Hageman 296). To build on Hageman's assertion, the cheshires underscore both vulnerability and the gaze of those creatures whose lives are connected with ours. When Jaidee and his fellow soldier Somchai witness a pair of cheshires preening themselves in plain sight, Jaidee intends to kill them because he perceives them as a symbol of "what Trade has given us"

(Bacigalupi 173). Like most Thai, Jaidee believes killing the cheshires will not harm his karma because they are unnatural and therefore soulless. His desire appears cruel, but his associating the cheshires with trade, i.e., globalization, corporate imperialism, and the suffering that Western biogenetic warfare has brought upon his people and land, makes it more complicated. Frawley and McCalman define “invasion ecologies” as species where reproduction is out of synch with the host community, arguing that it is not the species itself that is inherently invasive but how the species “interact with their biocultural environment” that makes them come to be perceived as invasive (4-5). They further observe that historically, colonization included the intentional relocation of useful/profitable plants and animals to other lands (7). As a transplanted companion species brought by Westerners, the cheshires are an example of an invasion ecology. Due to their Western origin, they are inseparable from the genetically created diseases that have ravaged the Thai, leaving Jaidee unable to recognize the cheshire’s gaze as one from an animal; instead, he sees it as the gaze of a monster symbolic of Western trade.

Conversely, Somchai expresses an opinion that demonstrates recognition of the cheshires shared vulnerability and mortality. He asks Jaidee not to shoot them because “They bleed like any other animal,” and later tells him that “They breed. They eat. They live. They breathe. . . . If you pet them, they will purr” (173). Somchai’s experiences being assigned to kill thousands of cheshires has left him unsettled by his actions; he now recognizes that their helplessness and ability to suffer transcends the categories of natural/unnatural, born/made. He has met their gaze in life and death. It is also clear that, through a shared entanglement, he has connected intimately with at least one cheshire to learn it purrs when petted. Anat Pick asserts that a “creaturely” understanding embraces a materialist approach to other creatures and does not recognize species as a significant mark of identity; it transforms “the way we think about relations between humans

and other animals” moving it towards a position for ethical consideration (17). Somchai has moved closer to this “creaturely” sense of relating to the cheshires. While he still perceives them in an anthropocentric hierarchy of being, sharing vulnerability with them has moved them beyond being seen as a soulless vessel by him.

Moreover, Somchai expresses the extent to which he blurs the lines that Jaidee sees as fixed by suggesting that with the reduced global human population in their post-contraction world, some of the souls must have been reincarnated into the ‘unnatural’ bodies of cheshires or even New People, thus suggesting the violence that Jaidee advocates towards them might be wrong because they are not the soulless husks Jaidee and Kanya see them as (173-4). Pick acknowledges that there is a longstanding tradition that perceives animals as merely necessary material bodies against which human “mindfulness and soulfulness” are defined (Pick 4). While Somchai still privileges humans as a higher marker of reincarnation than animals or New People, his position underscores how interactions with nonhuman others have facilitated his extending the recognition of a shared liveliness and empathy to New People and cheshires

I suggest Somchai’s moment of conscience is a significant instance in the text in its representation of something akin to Wolfe’s interpretation of Derrida’s “question of the animal” in terms of the shared finitude that connects humans and animals. Wolfe maintains that for Derrida, there are two kinds of finitude, the first being the physical possession of mortality and vulnerability, and the second being a form of “‘passivity’ or ‘not being able to’” in which our subjectivity and language are limited in their ability to define the human subject in terms that are not unique to it (*What is Posthumanism?* 88). According to Wolfe, “passivity and subjection are shared by humans and nonhumans the moment they begin to communicate by means of any semiotic system” (89), thus connecting them through these qualities. While humans and animals

“may share a vulnerability and passivity without limit as fellow living beings,” there is not an equally shared power to misunderstand their position and to reproduce it in the form of anthropocentric exploitation and oppression in institutions (95). Somchai’s recognition of the cheshires that situates them as fellow creatures models a form of this subjection, where such recognition of collective vulnerability generates a “not being able to” in him, removing him from an empowered position to kill them because he cannot deny their subjecthood (or in his terms, the possession of a soul). The gaze of the cheshire becomes a communicative gaze that connects them to people like Somchai in their shared observation, mortality, and helplessness, much in the same way they connect with Emiko in their mutual designation as hated, ‘unnatural’ others trying to make a niche. This gaze also extends to beyond the text, inviting readers to reflect on their own power and vulnerability in positions to kill or not kill creaturely others and to question the assumed designations of certain creatures as killable/bare life.

This moment where Somchai advocates for the cheshires rather than consigning them to the position of radically other demonstrates human-animal kinship and a destabilization of the natural/unnatural paradigm through the cheshire’s gaze and vulnerability. Similar to the line of questioning regarding the robotic cat mistaken for a real one in *Do Androids Dream of Electric Sheep*, readers are encouraged to question if this lab-made cat is any different from a naturally born one (beyond its unique adaptation) and why any such distinction should be a reason to justify cruelty towards it. Somchai asserts his belief in their authenticity/naturality because he has touched and interacted with them. This encounter demonstrates the transformative potential of material entanglements to build empathy and questioning of the categories of bare life. The accessible subjectivity represented by the cheshire’s gaze also seeks to transform the biopolitical question of ‘born versus made’ into one of kinship and empathy.

4.3.1 *Speciesism and Performative Humanity*

The Thai religious belief of “niche” values nonhuman life in ways that Western culture does not. However, Jaidee’s hatred of cheshires and Kanya’s cruel crushing of a butterfly while waiting for Gibbons because she believes it to be a “manufactured pollinator” (241) are highly problematic. Both Kanya and Jaidee speak frequently of the teachings of niche and their awareness of how Western consumption, globalization, and biogenetic practices have destabilized it, leading to species extinction and human struggle. Despite this awareness, the Thai’s concept of niche and their position regarding foreign trade are forms of nationalistic resistance that discriminates against both immigrant refugees and New People (King 8). Much like the Cartesian view of animals as machines, the Thai perceive New People and other genehacked creatures as having no souls. Both Kanya and Jaidee view New People and cheshires as “empty vessels” (173) that troubled souls might reincarnate into (250). Birke and Parisi contend that the machinic shifting of animals into radical others and objects fit for consumption stems from the fact that “they are *created* as Other and are powerless to change their fate. Their cultural meaning *is* as bodies, as flesh, as commodities to be consumed. They are not selves in the way we see ourselves” (61). In the case of *The Windup Girl*, the perception of the genehacked creatures as unnatural monsters marks a sharp contrast to the close relationship between the Thai and their seedbank that provides genetic material to recreate extinct food free from disease. Thai like Jaidee connect the seedbank with the people, giving it primary importance (King 10). This tension between negotiating the lines of natural and unnatural in *The Windup Girl* shows how genetics dually penetrates the species boundary while also reinforcing it. It reveals our kinship extending to the levels of code that is exchangeable across species; at the same time, it also has the potential to portray nonhuman life as objects of scientific study.

The Windup Girl illustrates how genetics has opened a world of hybridization that still perpetuates anthropocentric privileging, enshrining the divisive species boundaries between human and animal that enables the domination and bare life status of New People. Kurtz argues that Emiko is treated like “genetic trash” because New People are deemed to possess “immutable and pre-determined differences from ‘natural’ people” and are regarded as “programmed platforms” (187). New People are taught that they have two parts in their nature, one that is evil and ruled by the “animal hungers of their genes” and another “civilized self” that accepts its place in social hierarchies (Bacigalupi 154). This separates animals from humans at a genetic level akin to the way the Sonias are denied human status in *Salt Fish Girl*. It also groups New People in the category of animals, deeming them a sort of quasi-sentient pet that can labour, serve, and be disposed of by its master. Granting readers a sense of Emiko’s lived experiences and vulnerability challenge her designation as bare life or a technologized quasi-animal object.

Emiko’s “clockwork” movements and her treatment as an object of pleasure hybridize her identity into a disturbing combination of machine/toy and performing animal. Bacigalupi draws attention to the problematic notion of *taming* nature through science. Early in the text, Emiko wonders how she might feel if she were a “different kind of animal,” one where she “wouldn’t have to think. She wouldn’t have to know that she had been trapped in this suffocating perfect skin by some irritating scientist . . . who made her flesh so so smooth, and her insides too too hot” (35-36). Emiko’s perspective creates two significant points of contrast against Gibbons’s ideals that “We should all be windups by now. It’s easier to build a person impervious to blister rust than to protect an earlier version of the human creature” (243). The “irritating scientist” who gave Emiko skin that leads her to overheat gave her an impediment, not an improvement, and speaks against Gibbons’s totalizing reduction of life to upgradable code.

Emiko's bodily experiences undermine Gibbons's belief in technoscientific perfection and the belief he can control nature through technology despite so much of the ecological destabilizations of the ecosystem which humans must now adapt to being the result of biogenetic warfare and improvements. It also shows a Frankensteinian lack of responsibility for those creations or their suffering. While Gibbons upholds New People as an improvement to humans, Emiko's embodied suffering in society suggests the importance of an embedded approach to biotechnologies and multiple partial forms of knowledge to avoid such outcomes.

Similar to the Sonia clones in *Salt Fish Girl*, Emiko's position of otherness also functions to subvert the boundaries of the human and reveal its constructed nature by 'performing humanity. Emiko tries to hide in the open like a cheshire (252). Her impersonation is revealed when she fails to control her natural stutter-stop movements by slowing her speed (252). Until then, much like the androids in Dick's *Do Androids Dream of Electric Sheep*, people mistake her as human, thus destabilizing the division between humans and New People by emphasizing the performative nature of humanity. McQuiston argues that beyond sharing the status of being hybrid, infertile, and patented with the genetically modified seeds, Emiko's need to "pass" as human "is only acceptable so long as she can 'pass' as normal and nonengineered, mimicking various interpretations of what it means to be a 'natural' human" (202). By impersonating humans, Emiko deconstructs essential human qualities, revealing them to be objects of social engineering in a way that extends to questioning the unnatural status of the seeds. This invites readers to question aggressive biases towards genetically engineered life. If one cannot tell the manufactured version from the real one, is it really so different or so deserving of prejudice?

McQuiston claims that Emiko represents "the only rational hope for human survival in a rapidly decaying environment" because of her genetic improvements that grant her "preternatural

strength and reflexes, perfect eyesight, disease-and cancer-resistant cells . . . and longevity” (203-4). This makes Emiko similar to the Crakers in that she represents an alternative to humanity and the possibility we may end up in an environmental scenario where humans cannot adapt without having to become other. However, McQuiston’s claim of Emiko as “the only rational hope for humanity” is also highly problematic. McQuiston acknowledges the irony present in genetic technologies being both the cause of significant environmental damage and the potential solution to it (204) but does not recognize how this solution is complicated by Emiko’s aforementioned embodied experiences. One cannot separate that Emiko’s suffering was caused by corporate gene hackers like Gibbons. This fact, coupled with the harm corporate genehacking has caused through continued patenting, undermines the totalizing myth of genetics as the solution to this fall from nature. While Bacigalupi certainly invites readers to consider the possibility that the boundaries of the human may need to be renegotiated if we are to survive in the Anthropocene future, Emiko’s plight as bare life also tempers that potential with caution. If we are to become “a different sort of animal,” it must not be one bound by the nature-culture divisions and speciesism that has contributed towards the current mass-extinction event; it must be a situated animal that recognizes and negotiates its enmeshments and entanglements.

4.3.2 Acknowledging Nonhuman Agency and Multispecies Entanglements

Much like the virtual programs and mutating bio-plagues which Watts presents, Bacigalupi’s cheshires and diseases offer significant critical perspectives on the importance of recognizing the power of nonhuman agents to affect others and for considering their value outside of human needs. Neither nature nor the animals and life forms in it should be thought of as inherently benign (Birke 24-5). Like Watts’s behemoth, the diseases in *The Windup Girl*, especially the new one that kills Anderson, offer some of the more deadly examples of cross-

species entanglements and the fluidity of human-nonhuman exchange. The narratives of human-created invasive species and infections that quickly exceed control outside the lab function to deconstruct the perception of nature as a passive or harmless object. The cheshires breed and adapt, Emiko breaks free of some of her programming, and the seed companies' manufactured blights mutate uncontrollably to infect people, crops, and other species, all emphasizing how ecological systems are lively, unpredictable, and capable of threatening humanity.

After attempting to destabilize the Thai government to gain access to its seedbank, Anderson is ironically killed by the 'tropical' disease that has formed in his contaminated algae vats, his life cut short by a new infection (346). It is worth noting that this new illness is a mutated strain of blister rust, a Western-manufactured disease that formerly only affected crops but because of the animal proteins in the algae tanks, it encouraged a mutation to jump "the animal kingdom barrier" to infect humans (217). The plague's species leap further suggests the permeability of both plant, animal, and human genetic cell-lines, something the seed companies overlooked in their waves of biogenetic warfare. The uncontrolled spread of the plagues has also driven new technological becomings, resulting in continual exchanges between the infection, its hosts, and the constantly re-engineered crops that the Thai and Western seed companies produce.

As in Lai's and Watts's narratives, the impact that the infections have to subvert Western power and humanity's attempts to control the environment echoes Barad's concept of the agential intra-active power of "'doing'/'being'" ("Posthuman Performativity" 144). Deanthropocentrizing subjectivity—or in this case, emphasizing the potential for intra-active power in non-sentient agents—offers a "radicalized form of democratization" (Herbrechter 200). The diseases in *The Windup Girl* possess what Cudworth and Hobden term "*affective agency*"—the potential to cause significant changes to "natural systems and the beings and things caught up

in them” (47). Discussing Bacigalupi’s attention to posthuman agencies, Trexler argues it “allows *The Windup Girl* to trace the value of biodiversity” (*Anthropocene Fictions* 218). Moreover, Bacigalupi’s focus on posthuman entanglements emphasizes their power to impact human existence. As a new infection, the disease has the potential to alter the agential landscape, preventing Anderson from participating in the attempted coup. The presence of the plagues and illnesses in my focal narratives serve to both enmesh humanity in a matrix of connections with other species and to undermine assumed mastery over them—especially in a post-Anthropocene future like Bacigalupi’s that has been shaped by multitudes of nonhuman agencies.

As mentioned, Emiko’s portrayal as unnatural and an invasive animal places her outside the shifting and fragile multispecies community that the Thai hold for other natural species. According to Hageman, *The Windup Girl* avoids the conventional boundaries that separate the human and nonhuman and illustrates the virtuality of said borders in favour of modelling “an interconnectedness of all beings through disease and death” (293). By recognizing the kinship, we have in our networked bodies as already being technological and co-evolving with machines and companion species, one resists privileging the human and reinforcing natural/unnatural dichotomies. As with Somchai’s reaction to the cheshires, shared mortality and vulnerability unites human and nonhuman, opening one potential space for creating a sense of community.

While the diseases, extinct species, and thriving invasive creatures attest to the harm technoscience has done to the environment, Bacigalupi also resists constructing genetic technologies as outright evil. It is the failure to situate biotechnologies and their creations from the ecologies and assemblage systems they belong to that result in their causing harm. Bacigalupi also takes care to present hopeful examples of multispecies partnerships and the potential of biotechnologies to be a vital tool in approaching climate change through the seedbank. Tavera

describes the seedbank as a type of cyborg where, despite not being genehacked, the seeds are “nevertheless scientifically produced through ‘deextinction’ methods and depend upon a number of human and nonhuman material bodies for reproduction” (32). Its preservation offers some optimism by showing the productive exchanges involving humans, technologies, plants, and non-human animals that might offer some means of restoring lost species diversity. The seedbank’s preservation also acts as a testament to the resiliency and adaptive power of life. However, unlike the cheshires and New People, the seeds are perceived as having an inherent value for the community both culturally and economically. One of the most sobering things Bacigalupi depicts is how new species like the cheshires and New People are denied citizenship in a time of multispecies loss and environmental crisis. *The Windup Girl* offers a lesson in welcoming new subjectivities—including those created through technoscience—by working through “the ideology of the ‘human being’” (Hageman 294). Emiko’s hospitality towards the cheshires is one such example that puts forth the argument that niches should be open, not closed systems.

As explored in my previous chapter, the ending of *The Windup Girl* does leave some hope for the formation of a future community. King suggests it offers a potential new world for New People to form a community and “a repurposed biogenetic engineering pressed into the service of a new vision of the common” (11). Certainly, the juxtaposition of the salvaged fertile seedbank with Gibbons’s offer to grant Emiko descendants with full mental and reproductive agency leaves one hopeful for a reorientation in biogenetic practices towards building cross-species communities. King acknowledges the problem of Gibbons’s god-complex and that it renders the ending ambiguous. However, his assertion that “Gibbons imagines a new ‘natural’ world in which Emiko and her children will be able to live freely” (12) elides the unequal power relations and Gibbons’s complicity and participation in the biogenetic economies that created

New People to be obedient and infertile property in the first place. Hageman is more critical in his analysis, recognizing that Gibbons's hospitality to Emiko and the cheshires is undermined by his vision of techno-scientific godhood for the future that reasserts human dominion over nature (297). Much like the new partnership between humans and Seppuku in the *Rifters Trilogy*, the human-posthuman alliance here is ambiguous at best and one that should be treated with caution. As with Watts's and Lai's narratives, the potential for multispecies kinship and cooperation is present. Whether it will exist, however, is left uncertain and it is only in Atwood's *MaddAddam Trilogy* where the foundations of a potential multispecies community are modelled.

4.4 The Pigeon Responds: Multispecies Communities in Atwood's *MaddAddam Trilogy*

In *Staying with the Trouble*, Haraway contrasts our desire to make the imagined future secure through erasing the present and past when facing the future during times of urgency, with "staying with the trouble" that instead "requires learning to be truly present, not as a vanishing pivot between awful or Edenic pasts and apocalyptic or salvific futures, but as mortal critters entwined in myriad unfinished configurations of places, times, matters, meanings" (1). Her argument emphasizes the need to remain present and grounded in the "now" to stay aware of current forces affecting global ecologies and their denizens. In the creation story in the *MaddAddam Trilogy*, Crake attempts such a 'clearing away' of the present and past to make space for the Crakers by unleashing his plague to wipe out humanity. However, Atwood resituates the human through the partial failure of Crake's attempted control of the genetic narrative and evolutionary process by clearing away the past. Language and genetics are both codes that can be repeated, altered, and reinscribed. Jimmy as a "word person" acts as a cultural programmer to the Crakers. Sheckels notes that with Jimmy's help, the Crakers are creating a new mythology, despite Crake's supposed deletion of the capacity for religion/abstract thought

(Atwood, *Oryx and Crake* 151). Jimmy's multispecies interactions with them enact a social contamination and mutation of Crake's coding, allowing the Crakers to adapt. Atwood's trilogy moves through such becomings and negotiated partnerships between species towards a vision of a posthuman community, one that is achieved through empathy, care, and shared vulnerability.

In terms of Crake's attempt to totalize genetics, he does not consider the effects of coadaptation and coevolution outside of the pristine environment of the lab as the Crakers interact with different human and animal actors in it. Crake had attempted to obliterate the "G-spot" in the brain where he felt "God" and things like culture and reverence existed as clusters of neurons (Atwood, *Oryx and Crake* 192). Yet, with some help from Jimmy, the Crakers come to worship Crake and Oryx. The Crakers' social becoming can be read through Nayar's argument that we need to rethink the human as a self-produced entity and, instead, recognize it as coevolving with "organic and non-organic forms" (70). Craker interbreeding with humans, their development of religion, and—in the case of Blackbeard—literacy, undermine Crake's attempt at totalization through genetic modification and offers new potentialities that resist genetic foreclosure on the entirety of a lifeform and its potential to adapt.

The mutual coevolution of intellect and behaviour is also demonstrated through the pigeons who possess exceptional intelligence. At first, this uncanny intellect renders them monstrous and threatening to the human survivors, yet once they recognize that the pigeons are sentient and share in vulnerability with them, there is a displacement of the anthropocentric thinking that renders any creature outside the human either an object, food, or a threat. In *Oryx and Crake*, Jimmy encounters the pigeons during his childhood and demonstrates a shared sense of kinship which causes him to experience a moment of confusion where the seemingly clear divisions of self and other, human and animal become blurred, leaving him "confused about who

should be allowed to eat what. He didn't want to eat a pigoon, because he thought of the pigoons as creatures much like himself. Neither he nor they had a lot of say in what was going on" (29). Jimmy's shared sense of vulnerability with the pigoons in being completely reliant on the decisions of adults who are not always dependable generates a "moment of reluctant recognition in the scene of the Jimmy/pigoon gaze, a trespassing of the artificial lines demarcating humans from animals" (DeFalco 443). His memory reveals shared feelings of helplessness and a lack of ability to express agency in one's life and choices. However, such vulnerability has limits. In Wolfe's discussion of posthuman vulnerability, humans and animals may:

share a fundamental 'non-power at the heart of power,' may share a vulnerability and passivity without limit as fellow living beings, but what they do not share equally is the power to materialize their misrecognition of their situation and to reproduce that materialization in institutions of exploitation and oppression whose effects are far from symmetrical in species terms. (*What Is Posthumanism?* 95)

Recognitions of power and differences in agential potential when approaching nonhuman life are of equal importance to recognizing nonhuman agency. While Jimmy may share vulnerability with the pigoons, he possesses the advantages of personhood, human speech, and more agency than them because he is not categorically deemed a bio-object or confined to a secure pen.

Jimmy's early experiences and affinity with the pigoons during childhood also raise challenging questions about the ethics of xenotransplantation and animal rights (Marks 171). The distinction between Jimmy's experience of shared powerlessness with the pigoons and the position of his father and the other 'rationalist' scientists in the text underscores the need for being open to connection and empathy while being critically aware of the link between human privileging of rational subjecthood with institutions of oppression such as corporate labs that

treat animals as objects purely for human benefit. The vulnerability of creatures for the rationalist is “a condition to overcome and an opportunity for the creative powers of thought. But it is at the same time . . . an invitation to domination over mastery” (Pick 148). Jimmy’s childhood experiences that enable him to extend empathy to the pigeons differ from scientists’ like his father because he does not seek to dominate or master them, he meets their gaze and recognizes a shared sense of “non-power” regarding directing their modes of being.

While both the Crakers and pigeons initially appear somewhat monstrous to survivors, Atwood is careful to ensure that monstrosity is explored from both human and nonhuman perspectives. Dunja M. Mohr observes that “Atwood’s posthumans are no violent monsters” (246). Instead, she positions the human Painballers and corporate scientists in that role (Schmalfuss 102). I suggest Jimmy also becomes a monstrous figure for the Crakers. In Patricia MacCormack’s discussion of embodied monstrosity and the concept of “*teras*⁵⁵,” it is suggested that while occupying distorted shifts and indefinite heterogeneity, the form of the monster may not have gone through any noticeable change; it is how it is perceived that changes (83). In Jimmy’s case, while remaining physically human, the Crakers have “known from the beginning he was a separate order of being” (*Oryx and Crake* 123). Just as the pigeons occupy a liminal space between humans and animals, so too does Jimmy as he becomes Snowman (Wright 10). Snowman inverts the monstrous paradigm where he becomes a sort of hybrid god-monster to the Crakers, one with feathers on his face and extra skins that he wears (*Oryx and Crake* 415-6). Despite his eating of Oryx’s creatures and his physical differences, the Crakers do not reject him; their acceptance of Jimmy and eventual coexistence with the other human survivors further supports a narrative of shared becomings, kinship, and negotiating encounters with the other in

⁵⁵ From the Greek meaning both horror and marvel (Campbell and Saren 159)

order to form a community rather than a strong immunitarian reaction against it. Discussing the Crakers as a symbol of diversity, Mohr notes that without a desire for domination, the Crakers “valorize difference” (246). In doing so, Atwood’s trilogy offers both a critique of what we perceive as monstrous or inhuman—especially along the lines of hybrid and spliced bodies—and an orientation towards acceptance and community with otherness. Jimmy’s hybrid depictions of possessing the traits of beasts, birds, and mythical monsters work much like Lai’s blending of humans with snakes and fish, drawing attention back to humanity’s shared origins with animals and the liminal zones that subvert human/animal binary divisions.

Despite their somewhat alien literal interpretations of language and other genetically ‘programmed’ behaviours, the Crakers act as an excellent model of a posthuman mentality in that one of the key divisions between them and the humans is that they do not possess the anthropocentric belief that they are inherently superior to or separate from nature—a belief that is deeply rooted in Western philosophy, science, and culture. The Crakers negate concepts of the human as existing outside of nature (Rowland 59). Despite expanding our ecological footprint well beyond the global capacity and continually damning warnings regarding climate change humanity largely still appears “nowhere ready to see ourselves as creatures, as a singular species with no more or less inherent value than dandelions or tuna” (Belyea and Norris 8). The Crakers differ in that they consider all species to be equally loved and watched over by Oryx and Crake (*Oryx and Crake* 197), and that the chaos was cleared away for both the Children of Crake and the Children of Oryx (125). In their cosmology, Crake’s actions were for the benefit of both Crakers *and* animals. They do not perceive other animals as food or things to own or exploit; animals are Children of Oryx and equal to the point of requiring an apology if harmed. When having to defend against a bobkitten going after their young, the Craker women pray to Oryx for

forgiveness and ask her to tell the animals not to harm them (*Oryx and Crake* 192). In an inversion of the anthropocentric story of “Genesis,” the creation narrative that Jimmy produces with the Crakers does not position them as superior to other creatures; Crakers are Children of Crake, and animals Children of Oryx, they are made differently but loved equally.

The Crakers’ posthuman presence pushes readers to critically consider how the human has been conceived of in an evolutionary and cultural framework, and whether modifying ourselves for the benefit of the biosphere might be something other than the Faustian bargain that genetic modification is often portrayed as (Belyea 185) *The MaddAddam Trilogy* challenges readers to consider if it is enough to be aware of the ecological crisis and to choose to act morally—to invest in the belief of the human subject as a moral animal—or to decide that our behaviour is biologically determined and must be rewritten to ensure our survival. In this sense, Atwood presents a similar possibility to Watts and Bacigalupi—one that is also tempered both by her depictions of the objectification of creatures by corporate science and by the Crakers’ subversion of their genetic programming. The third option presented in her trilogy is the idea that the answer lies somewhere in-between and needs careful negotiation and attentiveness. DiMarco makes a similar suggestion in arguing that *homo faber*’s drives might be opposed “through repeated personal attentiveness to and concern for human and non-human others” (188). The final image of community offered at the end of *MaddAddam* is one such example of this care and attentiveness and seems the strongest idea Atwood puts forward to negotiate the Anthropocene future and provide a point of orientation in it.

Like Gibbons, Crake favours genetic determinism but also shares a form of posthuman politics in that he embraces a position of “deterministic naturalism” (Addis 9). He designs the Crakers based on what he believes will ensure their survival in the world, “regardless of the

gene's origin, be it from humans, other animals, or even plants" (Schmalfuss 98). Even before his Craker project, when Jimmy is visiting Watson-Crick and asks whether the butterflies in the garden are natural or not, Crake criticizes him, telling him there is no difference: "These butterflies fly, they mate, they lay eggs, caterpillars come out" (*Oryx and Crake* 244). Crake's statement is quite similar to the one made by Somchai in *The Windup Girl* regarding the cheshires as evidence of their 'realness'. Crake is also similar to Gibbons in that he does not separate technologically made species from nature. Rather than making such a distinction, Crake groups species by their vital behaviour. This is not to say his politics are not problematic. Crake espouses a form of bioinformatic posthumanism which reduces all behaviour (including gender performance) to biological essentialism. This reductive approach also suggests a less optimistic critique of humanity in that we may have intrinsic flaws as a species that guarantee our extinction (Kozioł 502). In this sense, Crake's solution of changing humanity from the inside to be more ecologically sustainable is similar to Taka's utopic hope of a better and kinder species emerging in the *Rifters Trilogy*. However, much like all my other narratives, the utopic possibilities of technoscience to solve our problems are undermined and complicated both by who uses them, the potential violence of the process, and the unpredictability of the multiple complex agential forces at work in environmental assemblages. As Crake's creation, the Crakers draw attention to the liminal nature of bioengineering in that its moral and physical consequences can only be gleaned by situating it in the entangled system of relations that connects species.

4.4.1 Empathy and Lab-Animal Ecologies

The pigeons' and ChickieNobs' niche purposes as bio-objects efficiently critique the way animals are treated by science for the benefit of humans. Lab animals are perceived as having less moral claim than those outside the lab and inherently less ethical value than humans—thus

justifying research on them (Birke 49). Jimmy experiences horror at the grotesque state of the ChickieNobs, a fact emphasized by the complete lack of horror exhibited by Crake and the other scientists. Discussing the problematic continuation of the body-machine, Birke observes how it lives on in the metaphor of the body as a factory that “emphasizes efficiency and control” and generates differences between humans and animals (119). The ChickieNobs offer a poignant depiction of the body-factory model taken to an extreme in that humans are skilled enough at body-factory management that it is easier to create the animal-bodies without a brain and where the ChickieNobs have been modified for (Atwood, *Oryx and Crake* 246-7). Crake is untroubled by the ChickieNobs because “In the absence of pain, Crake presumes, the machine has been perfected. The animal problem, (a problem of empathy, a problem of identification, a problem of kinship) has been solved” (Lapointe 140). In contrast, Jimmy’s feelings that “some line had been crossed, some boundary transgressed” (*Oryx and Crake* 250) suggest that the animal problem is not as simply reduced as Crake believes. ChickieNobs occupy a liminal state between animals and organic machines, drawing attention to the reduction of animals to tissue cultures for consumption or scientific use. The line Jimmy refers to may be a moral one, but it also may be one of categorization referring to whether the ChickieNobs (whose brain functions are limited to maintaining its bodily functions) are still an animal at this point or if they are merely a form of lab-cultured meat, asking readers ‘at what point do we draw the line?’

The centrality of the interconnections between technology with humans and animals in all my texts underscore the necessity to re-examine human relationships with other lifeforms, especially in the field of technoscience. Ambivalence in the lab affects how researchers think of and talk about animals (Birke 63). This makes it easier for them to be thought of as data. Atwood’s trilogy critiques this ambivalence through Jimmy’s empathy in his encounters with the

pigeons and ChickieNobs. The language used in the construction of the animal in these spaces is also worth examining. In the pre-fall world, Atwood illustrates the ways we traditionally categorize animals either as food for consumption (the ChickieNobs), pets granted semi-human privileges (Jimmy's rakunk Killer) or as lab-objects with biological use value (the pigeons). Rethinking the species boundary can move communities beyond strategies of rendering species more human or animal, projecting us instead towards the challenging space of a multispecies ethics and society which requires negotiating approaches to life and death. In her discussion of the difficulty killing poses to in negotiating community, Vint contends that "The problem is continuing this multispecies community relation within a context where ethics has a limited scope and much killing can be done outside of its bounds" (80), something she connects to the category of being rendered "killable". Vint points to the difficult challenge of generating a multispecies ethics when so much of our socio-cultural institutions, economies, and science are built on the biopolitics of bare life.

Observing how *Oryx and Crake* addresses the problem of consuming a thinking being, Nayar points to the ChickieNobs where the question of whether an animal 'thinks' is rendered moot in the removal of all cognitive processes of the chicken beyond those necessary for digestion, growth, and processing of nutrients (88). While the ChickieNobs can neither think nor feel, Jimmy's question of what the ChickieNobs might be thinking (Atwood, *Oryx and Crake* 246) offers a starting point to imagining what Vint suggests as a laboratory space where nonhuman animal lives also matter and where laboratory practice includes genuinely caring about the lives of animals and conserving them better (*Animal Alterity* 198). Haraway and Vint both contend that approaches in the lab (and to companion species in general), must include respect, engage in an embodied multispecies politics that positions animals as subjects rather

than objects, and negotiate shared suffering from that standpoint (Haraway, *When Species Meet* 88), (Vint, *Animal Alterity* 199). Atwood's depiction of the lab through the treatment of the pigeons and the ChickieNobs portrays it as a space of genetic biocomputing, where all matter is reduced to code for humans to use. It is a critical condemnation of the current practice, something she disrupts through Jimmy's reflective moments of empathy and consideration of these lifeforms from their perspective.

The *MaddAddam Trilogy* draws attention to how such categorical divisions distance humans from their responsibilities towards other species and those they group as other. Just as the divisions of natural and man-made create problematic boundaries that prevent multispecies ethics, the mass grouping of the category of the animal for everything nonhuman is often used to similar ends, so that "The statement 'it's only an animal' transforms other beings into things whose suffering makes no ethical claim upon us" (Vint, *Animal Alterity* 29-30). Derrida maintains that grouping everything outside of the human into the category of animal is an act of erasure of the "immense multiplicity of other living things" (*The Animal* 61). He further argues that "The confusion of all nonhuman living creatures within the general and common category of the animal is not simply a sin against rigorous thinking . . . it is also a crime. Not a crime against animality, precisely, but a crime of the first order against the animals, against animals" (61). Ironically, in creating a 'superior' and less destructive form of humanity, Crake displays the same ambivalence to suffering that he has witnessed in the treatment of nonhuman animals by the corporate laboratories—an ambivalence he extends to humans such as the poor, immigrants, prostitutes, and criminals he recruits for his BlyssPluss trials—and presumably for the progenitors of the first generation of Crakers too (Atwood, *Oryx and Crake* 357). Crake's politics reflect an anti-human position, possibly stemming from his belief that humans are worse

than animals (Koziol 500). His treatment of the people in his Paradise project experiments is reflective of how animals are treated in the lab, suggesting that permitting these practices of corporate science, we are little better than Crake in our treatment of other species as bio-objects. Atwood models how the use of the category of animal for everything outside the human elides multispecies differences (particularly in late-Capitalist practices) and can be very dangerous in enabling bare life—including enabling its extension to other humans.

4.4.2 Animal Subjects and Negotiating Posthuman Communities.

Much like Lai's Serendipity community and the Western colonizing gaze of Bacigalupi's Anderson Lake, Atwood's pre-plague world defines non-human nature as other in that it is treated purely as something consumable and exploitable. However, in the post-plague world (most clearly depicted in *MaddAddam*), such a split between the human and non-human other is overturned. Discussing this difference, Rowland observes that "In the aftermath of Crake's plague, both genetically modified and 'natural' animals and plants remain as well as genetically modified humans [Crakers] and 'natural' humans" (52). This heterogeneous mix of creatures disrupts the traditional nature/culture binary as the gene-spliced creatures integrate and find niches outside the lab, contributing to a figurative and literal 'posthuman ecology'.

Nayar argues that Anthropocentrism makes language the focal point of species identity for human beings," allowing the denial of visions of animal interiority (91). The *MaddAddam Trilogy* certainly illustrates this problem even in characters who do exhibit creaturely empathy since the pigeons are only recognized as persons because the Crakers are able to translate for them. Mohr offers an alternative view, describing how as part of the necessary deconstruction of the human-animal boundaries in *MaddAddam*, the narrative "gradually eradicates these species hierarchies, as humans become the minority life form on the planet, and accordingly, the

narrative voice is turned over to a Craker” (248). It is likely that without the Crakers acting as an interface, the humans may have failed to recognize the pigoons as sentient. However, throughout the trilogy, readers slowly receive signs of the pigoons’ sentience. Jimmy encounters firsthand their intellectual capabilities when the pigoons trap him in the compound leaving him thinking “It’s as if they’ve had it planned . . . as if they’ve known for some time that he was in the gatehouse and have been waiting for him to come out, far enough out so they can surround him” (Atwood, *Oryx and Crake* 322). That the pigoons have a culture is also hinted at in *Year of the Flood* when Toby encounters the flower-laden corpse of the one she had killed. At that moment, she dismisses considering extending the ability of mourning to the pigoons:

But pigs? Usually they’d just eat a dead pig, the same way they’d eat anything else. But they haven’t been eating this one

Could the pigs have been having a funeral? Could they be bringing memorial bouquets? She finds this idea truly frightening (328).

Despite the evidence in front of her and even with having been a God’s Gardener so more likely to recognize animals as fellow creatures and agents, Toby resists extending any traditionally “human” traits like funerals and group mourning to the pigoons. It is not until the pigoons arrive in a peace delegation mediated through Blackbeard and the other Crakers that the human survivors must finally confront the pigoons as conscious and sentient beings (*MaddAddam* 269). I suggest that Atwood intentionally traces this slow path of recognition to demonstrate how difficult it is for humans to willingly recognize the sentience of another creature. Doing so is still problematic for privileging sentience over vitality, thus Anthropocentric; however, it still grants the pigoons a form of subject-citizenhood. This recognition is most notably demonstrated in their participation in the trial and vote regarding the fate of the Painballers at the end of *MaddAddam*

and occurs after they have already been depicted with vulnerability and mortality in their asking not to be eaten (369-70). Much like the humans, they have young they wish to protect, and they grieve for their dead. Thus, Atwood appears to take two approaches to her posthuman ethics, the concept of multispecies “citizenship” and a focus on shared vulnerability.

Weighing these two approaches in their discussion of posthuman emancipation, Cudworth and Hobden argue that “the vulnerable body can exert a stronger pressure than a demand for rights; it exerts a ‘corporeal plea’ against violence” and “enables a better understanding of creaturely agency” (133). In the case of the pigeons, combining these processes does privilege the cultural concepts of anthropocentric rights and justice; yet at the same time, it models an affective set of multispecies relations that extend to species beyond those who can vote and speak. Atwood’s narrative also demonstrates the difficulty in imagining fully posthuman communities; anthropocentric values are so pervasive it is hard to think outside them and even harder to imagine ways to form communities that do not hinge on them.

Atwood places the pigeons in a distinctly liminal area as species borders are erected or removed. Marks observes that later in *Oryx and Crake*, Jimmy’s relationship to the pigeons shifts from what he had as a child as the “boundaries that had once contained the pigeons [are] now broken, they treat him as food, and his waking hours are a constant battle to outsmart them and so survive a ghastly death” (172). A different boundary shift occurs in Toby, who is visited by a sow pigeon and piglets during her spiritual meditation. After that encounter, she feels remorse for having shot and killed one of them. She dreams of “innocent piglets” and “piglets talking in foreign languages; even piglets singing. . .” and cannot eat the ham served that morning (Atwood, *MaddAddam* 261). Her valence of viewing the pigeons as a threat, to food,

and then to “innocent piglets” reflects the shifting position of the pigeons where they eventually emerge as a companion species that has specifically asked not to be killed and eaten.

In a humorous moment that undermines anthropocentric cognitive privilege, Toby asks during the pigeon-human ‘peace talk’ why the pigeons are only talking to Blackbeard and not to the other humans only to realize: “Of course, we’re too stupid, we don’t understand their languages. So there has to be a translator” (270). Superior human understanding is subverted, leaving a space of liminal otherness occupied by the pigeon that must be confronted and mediated. By the end, the pigeons become an accepted part of the extended community and the survivors actively aim to share space with them, even partaking in a group funeral where the pigeons carry Adam One’s and Jimmy’s bodies “as a sign of friendship and inter-species co-operation” (373). This slow transition towards an inter-species community shows the difficulty humanity has in recognizing non-human agency and forms of animal intelligence, as well as the discomfort of opening oneself to embracing a multispecies community. The pigeons reflect not only a liminal non-human animal but one that is eventually transformed through kinship and posthuman intra-actions into fully recognized community members.

Many of the survivors assume that the pigeons are more like humans because of their human neocortex splices. In this sense, the survivors embody the kind of harm that comes with privileging consciousness does to multispecies knowledge. For Wolfe, “intention” and “consciousness” have continuously harmed attempts to comprehend just how humans and nonhuman animals share the world (*Animal Rites* 87). DeFalco observes that some have critiqued Atwood’s trilogy as affirming a humanist position in privileging culture, human language, and consciousness (436). To this extent, Atwood does seem to reinforce certain human cultural gains in language and consciousness, not only in her pigeons but also in her emphasis on storytelling

and writing, which is passed on to Blackbeard. However, the citationality of language and the ability to reinscribe words and meanings through the differently embodied Crakers and pigeons arguably uncouples language from its 'uniquely human' affiliation.

In the case of the Pigeons' peace offering, they specifically come asking for help in getting vengeance on the Painballers for the death of their young. They recognize that the humans have abilities that they do not and access to powerful weapons (guns) that they cannot use. The pigeons even mutually acknowledge human fear and vulnerability, swearing that "they will never again eat your garden. Or any of you" (Atwood, *MaddAddam* 270). In this sense, language works as a means to extend shared vulnerability and mortality in a way that allows the human and nonhuman animals to destabilize their boundaries through forming a community. Moreover, the presence of different communication abilities, free will, and self-determination in the pigeons reclaims many of the qualities humans have for so long used to identify themselves as unique. In this sense, Atwood's posthuman characters model what Cudworth and Hobden identify as a common theme in posthuman scholarship: a rejection of human exceptionalism and the idea that humanity is somehow unique from all other life forms due to these qualities (41). Writing, culture, and language are philosophical pillars of the human subject, but Atwood's use of nonhuman agents performing them invites readers to question these foundations.

Blackbeard's learning to read and write, despite Crake's belief that the Crakers should be incapable of doing so, also undermines human exceptionalism. Blackbeard eventually even takes over the role of storyteller at the very end of the narrative, keeping Toby's journal and the tradition of the Craker stories alive (*MaddAddam* 385). Craker consciousness is distinct from human consciousness and Blackbeard's writing demonstrates his continued struggle to face the otherness presented by the humans and their culture, mirroring the reader's struggle to

understand the very literal Craker logic. He continuously identifies himself, sometimes even in the third person with “He (I, Blackbeard)” (379). These moments of interiority offer a distinctly different relationship to language and consciousness than either the humans or, as Rowland observes, the pigeons (55)⁵⁶. Like the other narratives I have examined, Atwood’s ending also leaves many uncertainties, especially as to whether the Crakers and Craker-human hybrid children will eventually develop some of the more destructive acts of human behaviour. However, there is hope in the power of the narratives of love and multispecies kinship which the Crakers preserve, something that may ensure a sustained healthy co-existence with other species.

Additionally, the pigeon-Craker-human cooperation shows the beginnings of a posthuman community, one Rowland also links with facilitating a form of ecofeminist praxis that nurtures community (57). During the mission to capture the Painballers and rescue Adam One, the pigeons repeatedly demonstrate an awareness of the needs of other species. Young pigeons watch over the Mo’hairs to protect them from predators (Atwood, *MaddAddam* 346) and the adult pigeons allow Jimmy to ride them because of his injured foot, even having two members run alongside to ensure he does not fall off (350). They also model excellent strategic planning, ensuring the Crakers have fresh food close-by while also clearing the tall grass around the spa to prevent a Painballer ambush (340). The pigeons accomplish all this without being instructed by the humans, proving their aptitude for group cooperation, critical thinking skills, and an acute awareness of the needs and limitations of the other species they are working with. This attentiveness helps build trust and strengthens a sense of kinship. Interspecies relationships are not based on “simple control, domination and exploitation” (Cudworth and Hobden 7). Atwood’s

⁵⁶ While Rowland elides the pigeon consciousness with “human self-consciousness,” I disagree, as it erases recognition of their culture, perceptions, and embodied experiences that are uniquely pigeon.

trilogy ends with this image of a negotiated and cooperative posthuman community, offering a potent contrast to the exploitative capitalist communities from before Crake's plague.

Toby and Jimmy's openness to kinship with nonhuman animals helps readers to question normative categories that separate the nonhuman from the human. Vint argues that the value of science fiction lies in its ability to estrange us from the connection between our human-animal boundary and food, allowing us to reconsider it from a non-anthropocentric perspective (*Animal Alterity* 26). Shared vulnerability through "recognition of similar, mortal embodiment" is something that facilitates a new way to think of subjectivity and human-nonhuman social relations (154). For Vint, humans become posthuman as their relationship with animals becomes a mutually constitutive identity for each other, rather than a one-sided relationship (165). The Painballers' trial offers an example of a shared social space with nonhuman agents. The pigeons "vote collectively, through their leader, with Blackbeard as their interpreter" (Atwood, *MaddAddam* 369-70). The funeral for Jimmy, Adam One, Oates, and the killed pigeon near the end of *MaddAddam* is another example of a mutually constituted communal relationship and one of multispecies grieving. The pigeons show their friendship in carrying the bodies of the deceased humans and share their rite of piling the dead with flowers and ferns while the Crakers sing (373). This funeral offers many examples of multispecies cooperation, including the humans requesting that the pigeons not eat the dead and the pigeons both agreeing and sharing some of their intricate rules regarding when they do or do not eat the dead, further indicating their own complex culture (373). The choice of trees selected for the graves (Kentucky coffeetree, crab-apple, and an oak) (374) also reflects this new spirit of kinship in that they mix offerings for both the humans and pigeons and add a symbolic promise of fruitful growth and renewal. Cudworth and Hobden argue that in the current Anthropocene era, there is a need to contemplate future

possibilities other than the potential death of humanity (and other animals), and to consider if new alliances and some form of healing might be found instead (11). In her posthuman ending, Atwood offers one such vision of new understandings through empathy, multispecies becomings, and openness to confronting the otherness presented by non-human species.

4.5 Conclusion:

Atwood, Bacigalupi, Lai, and Watts all model posthuman becomings primarily through their (often cyborg) female characters as well as animal others—and in the case of Watts, a virtual other—all of which destabilize the authority of the hegemonic human subject. While technoscience and capitalism practice a form of posthumanity in the conversion of bare life, critical posthumanity and its approaches to species through shared vulnerability and empathy attempt to negotiate the intersections of bodies, technologies, and ecologies through embracing a situated politics that resists such reductions. Vint maintains that science fiction offers a promising space of responding to the animal question by generating a space of uncertainty where the traditional human subject and animal other boundaries are blurred and in processes of continual becoming so that new ways of conceiving of humans and animals might be explored (*Animal Alterity* 227). My focal texts occupy this space in varying ways in terms of deconstructing those boundaries and forging new relationships between humans and animals. As works of science fiction, their ability to depict posthuman beings, viral agencies, and nonhuman sentience amidst climate-changed futures uniquely positions them for advocating for an embodied multispecies politics that is ecologically situated and founded on principles of empathy, kinship, and openness to negotiating difference rather than domination and mastery through technology. Rather than exclude technology, examples such as Lai's fertility granting durian, Bacigalupi's genehacked seeds, and Watts's interfacing of Lenie with Anemone play an

important role in enabling such partnerships while emphasizing that they must always be co-constituted and negotiated from multiple perspectives and positions.

These posthuman texts also recognize limitations, such as our privileging of consciousness and likeness to us when forming kinship bonds, something that even in the texts I have dealt with, appears difficult to overcome. Watts's *Anemone* and Atwood's depiction of the Crakers' and pigoons' minds help undermine the uniqueness of the 'rational' human subject but demonstrate how dependent we are on language and sentient to form empathy and relatability to other beings. They also illustrate the difficulty in connecting with and understanding nonhuman life. Despite these limitations, I have aimed to demonstrate how these works reflect a critical posthuman focus on the enmeshed and tangled embodiments of humans, animals, and machines in ways that cannot be separated by an imagined nature-culture barrier, an attentiveness often overlooked by narratives that take a more anthropocentric position. Considering the ways that nonhuman agency factors into the narratives, events, and human lives in the texts also allows one to recognize the extent to which human authority is mutually dependent upon and shaped by multispecies life—be it bacterial, plant-based, or animal. The plagues, seeds, durian fruit, and pigoons all take roles in the narrative that open potentialities through breaching traditional anthropocentric boundaries that separate humans and de-legitimize the vulnerability and vitality of non-human animals. This does not mean there are no dangers or limits to these partnerships; certainly, infections such as *Behemoth* threaten community and ecological diversity. However, through their depictions of posthuman and nonhuman life and its agencies, my focal authors present a common feature of inviting readers to rethink the species boundary by opening possibilities through inter-relational exchanges and imagining posthuman agencies and communities founded on multispecies becomings and shared vulnerability. In doing so, they

offer readers an ecologically situated perspective of the human where its choices cannot be considered purely for its own benefit or detriment.

The difficulty of working through a posthuman approach towards non-human life is depicted in all my focal authors' narratives alongside approaches that suggest possible fruitful ways of proceeding. Recognizing the complexity of this problem, Haraway asks "How do we designate radical otherness at the heart of ethical relating?" ("Otherworldly Conversations" 143). This problem may well lie at the centre of posthumanism and is one where the varied approaches to nonhuman agents taken by Watts, Lai, Bacigalupi, and Atwood demonstrate that while there is no simple or singular approach; it is vital that we resituate the human and remain open to trying to negotiate radical otherness in order to move towards an ecologically embedded ontology. Many of my texts in some way suggest a form of taking that other into the human, either through infection (Watts), genetic modification (Atwood), consumption/integration (Lai), or learned encounters (Bacigalupi); however all of them are united in suggesting that the current concept of the human as outside of nature and empowered to dominate other species through technology must find a way to negotiate that otherness and change from within if we as a species are to amend our methods of being and becoming with the planet and its denizens.

5 Resituated Ecologies: Returning to the Mesh

As explored previously, environmental concerns are not new to science fiction; however, the rise of climate change fiction (also known as “cli-fi”) demonstrates a post-millennial preoccupation with the environment’s increasingly unpredictable and threatening presence due to anthropogenic climate change, a theme that is significant in all my focal texts. Carolyn Merchant argues in *Autonomous Nature* that the twenty-first century is characterized by unpredictability caused by us reaching numerous environmental tipping points and cascading effects⁵⁷ (2-3). According to Carolyn Merchant, “Climate change is both global in scope and cumulative in effect, reflecting these uncertainties and limits to predictability. New ways of living within the everyday world are therefore needed” (1). Clive Hamilton similarly suggests that on post-Holocene earth, concepts of human control of nature must be abandoned (48). Buell also describes the current shift towards “crisis awareness,” where we spend increasing amounts of energy dealing with climate crisis to the point it appears to have become “a way of life” instead of an apocalyptic end-scenario (264), a point that is of valid consideration in how normalized the climate crisis events are depicted in many of my focal texts, especially in Atwood’s trilogy.

In this chapter, I will further advance my earlier argument regarding the uncertainty and openness of the endings of my focal texts, suggesting that this resistance to closure and uncertainty is, in part, a reflection of the increasing unpredictability and instability of the stressed environmental systems and projections for the future due to climate change. One notable facet of these ecological narratives is how instability, in part, stems from technology no longer being reliable to solve global environmental problems. I argue that this instability results in a turn

⁵⁷ Tipping points are “critical thresholds in a system that, when exceeded, can lead to a significant change in the state of the system, often with an understanding that the change is irreversible” (Hoegh-Guldberg et al. 179). Once crossed, these tipping points are expected to lead to further uncontrolled effects that may then trigger others.

towards a deeper level of embeddedness that reorients readers towards a situated ecological nexus by which they might better navigate the unpredictability and disorientation that results from seemingly certain forms of knowledge becoming no longer dependable.

My focal narratives all share an enmeshed approach to the environment, positioning humans as being located within an ecological assemblage where they are always enfolded in a process of exchange with other parts. Instead of clear singular points of origin and destination, the rhizomatic nature of such interconnections contributes to this level of uncertainty and unpredictability through the possibilities opened by the ongoing multiple interactions across species and environments. This rhizomatic nature also provides an opportunity to connect readers to some of these potential futures through narratives that situate them within the ecosystem and erode anthropocentric fantasies of techno-scientific dominance and separation from nature. Doing so facilitates a stronger conceptual understanding of the complexity of the hyperobject⁵⁸ of climate change and its global entanglements. As demonstrated in previous chapters, posthumanism and much ecofiction both attempt to deconstruct the nature/culture division established through accounts of techno-scientific and ecological domination and its contribution to facilitating the current industrial culture of waste, species loss, and environmental exploitation for the sake of human ‘progress’.

In *We Have Never Been Modern*, Bruno Latour critiques the separation of nature and culture, describing two sets of practice related to “being modern” where the first creates hybrids of nature and the second aims at a clear division and definition of the human and nonhuman; Latour argues these approaches must remain separate but have begun to experience boundary

⁵⁸ Morton defines hyperobjects as human created objects which will continue to exist through many lifetimes—nuclear waste, plastics, and Styrofoam being a few examples (*The Ecological Thought* 130).

confusion (10-11). According to Latour, nature and culture⁵⁹ appear as separate domains but are, in fact, mutually interdependent and defining, and one concept that has been split in two in the Western tradition (*Facing Gaia* 15). We cannot treat them as separate concepts because “They reinforce each other” (*We Have Never* 30-1). Major environmental problems such as damage to the ozone layer and global warming underscore this lack of modern condition in their being hybrids of and inseparable from both nature and culture (50).

Latour’s work identifies the need to situate problems such as climate change within a hybrid network of relations that include “natural” and “artificial” because they are inextricably bound to both sides of the perceived nature/culture binary. He proposes a Parliament of Things where representatives of multiple aspects of global entanglements including quasi-objects and nonhuman nature are represented (*We Have Never* 144). While some critics have observed limits to this concept because creatures in nature would be represented by scientists who speak for them (thus humans still speaking for nonhuman nature), it does bear a notable similarity to the council representatives for nonhuman animals and the environment set up for community decisions in the Mattapoissett community envisioned in Piercy’s *Woman on the Edge of Time* and even the human, Craker, and pigeon jury at the trial in *Atwood’s MaddAddam*. The concept of the Parliament of Things is also significant in that it calls for politically recognizing and revealing the complex multiplicity of exchanges occurring between human and nonhuman life while also removing nature from the role of a passive object.

Nature is commonly identified with “the essential, basic constitution of the world;” yet, it is problematically also construed as “objectified and malleable” (Graham 32-3). Timothy Clark suggests that the nature/culture dichotomy seems an ineffective tool to address issues like carbon

⁵⁹ Latour uses the term “Nature/Culture” to underscore this inseparability and to avoid defining one through the other’s othering. See *Facing Gaia* (16).

emissions from our daily actions and environmental interactions which, while seemingly trivial, “become subject to the incalculable multiplier effect of growing population numbers and the uncertainty of unknown ecological tipping points” (“Nature, Post Nature” 80). Clark goes on to argue we have reached the point where objects and people alike are political in that “A new car in San Francisco or Shanghai must also be considered, however minutely, as a threat to the snow line in Nepal or Spitsbergen” as a means of illustrating through such phenomena the Latourian dissolution of any seemingly clear-cut divisions of nature and culture (80). In other words, it is impossible to separate our day-to-day actions and attachments from the environment.

Like Latour, Haraway also criticizes the nature/culture binary, she contends that contemporary genetics is one area that demonstrates their inter-dependency because “Nature mutates into its binary opposite, culture, and vice versa . . . Nature is the programme; we replicated it; we own it; we are it. Nature and culture implode into each other and disappear into the resulting black hole” (“Otherworldly Conversations” 138). The dissolution of nature and culture in genetics speaks to the concerns of my focal texts; their clone and cyborg figures suggest that we are subsumed back into nature by replicating it through technology, thus underscoring its innate artificiality. These posthuman figures also critique the privileging of technoscience and its perpetuation of distinctions between born vs. made/natural vs. technological. Through their eco-posthuman preoccupations, Watts’s, Lai’s, Bacigalupi’s, and Atwood’s narratives also demonstrate the complex sites of exchange and flow between “nature” and “society” where much of what appears natural may harbour artificial origins or vice versa—the Durian tree in Lai’s *Salt Fish Girl* or the virtual Darwinian evolution of the Lenies in Watts’s *Behemoth* being two such examples.

In his discussion of the growing problems associated with climate change, Buell observes that “global warming has emerged as an impossibly complex, interactive crisis, one that connects material with semiotic change in an almost uncountable number of societal and environmental places” (268). Buell further describes the increasingly complex interrelationality between global warming and its actors, arguing that there is no “outside” to the current “inside” of climate change, that there “are no alternative spaces, no ways back” (265). Without an outside perspective, it is difficult to fully grasp the totality of it. Further challenges are added by the fact that climate change is both a difficult phenomenon to represent and invisible (Goodbody and Johns-Putra 234). Theories of enmeshment and assemblage are increasingly applied to climate change in an attempt to help locate oneself within it. These theories are also useful for understanding the ways that my central texts decentre and reorient the reader.

Morton’s ecocritical scholarship challenges the common understanding of “Nature,” arguing that it is a heavily constructed artifice that always exists somewhere else (*The Ecological Thought* 4). Nature is an artificial conceptual construct to separate “human systems from Earth systems” (*Dark Ecology* 58). Morton’s ecocritical project is to achieve an “ecology without nature” (*The Ecological Thought* 4), focusing instead on what he terms “the ecological thought” where one must think coexistence by thinking beyond and outside of Nature (4-5). He introduces the “mesh” as a concept of enmeshment/entanglement that utilizes assemblage thinking to facilitate understanding of both the connections and interstitial spaces in a network and to emphasize interdependence (28). Much like Deleuze and Guattari’s theorization of the rhizome, “Each point of the mesh is both the center and edge of a system of points, so there is no absolute center or edge” and is comprised of “All life forms” including the living and nonliving beings that involve them (29). Morton’s conception of the mesh is particularly useful for thinking about

situating people within the environment as well as thinking of the environment in ways that accommodate all things born, made, and virtual.

To varying extents, all my focal texts can be positioned as ecocentric where “ecocentrism” refers to a position that “decenters the human subject through an understanding of the interrelations of species in natural environments” (Moore x). As posthuman texts, they situate their human (and posthuman) characters as embedded parts of their environments along with other species that inhabit them⁶⁰. I argue this ecological turn may help us conceptualize climate change despite the challenges of perceiving it in a comprehensible way. Naomi Klein aptly describes the difficulty in writing about climate change, stating “Climate change is slow, and we are fast. When you are racing through a rural landscape on a bullet train, it looks as if everything you are passing is standing still . . . They aren't, of course. They are moving, but at a speed so slow compared with the train that they appear static.” Discussing Klein’s quote, Morton adds “We are faced with the task of thinking at temporal and special scales that are unfamiliar and gigantic” (*Dark Ecology* 25). Morton asserts that our awareness of the world is emerging “at the precise moment at which we are ‘destroying it’—or at any rate, globally reshaping it” (*Ecological Thought* 132). The texts in this thesis are all set in futures shaped by climate change with some, like *Salt Fish Girl*, even intertwining the past with the present so that the future is looking to both our present and past in a way that helps connect events along a temporal scale. Science fiction employs techniques such as temporal estrangement to render imagined future outcomes more accessible to readers. Matthew Schneider-Meyerson’s survey of Americans reading climate change fiction observes that “some readers reported reconfiguring their temporal

⁶⁰ While many Indigenous forms of knowledge and even some earlier Western writers have situated humans as an embedded part of the ecological world system, the prevalence of Enlightenment thought and cultural separation of science/technology from nature has meant that this has not been a commonly accepted view, especially in science fiction where themes of mastery over nature or fantasies of technological transcendence are still common.

perception of environmental processes or becoming aware of the ‘slow violence’ of climate crisis for the first time” (484). Texts such as *Salt Fish Girl* and *The Windup Girl* draw clear connections between their present time and the past (our present) which facilitate understanding the new ‘norms’ of climate change resulting from such repeated “slow violence” and passivity.

Having already examined the extent to which my focal narratives present humans as enmeshed with other lifeforms, this chapter will extend that work to the environment as a whole by applying the materialist theories of posthuman agency presented by Barad and Alaimo. Doing so will help connect the ecological with the posthuman, establishing the human’s enmeshment with other life forms and the environment. An ecological posthumanism “contextualizes the human being within the material environment of the biosphere” (Sullivan, “The Ecology” 83). Thus, Alaimo’s trans-corporeality emphasizes the human is “ultimately inseparable from ‘the environment,’” preventing nature from being positioned as a passive background agent to be conquered by humans (*Bodily Natures* 2). Barad’s work similarly reconceptualizes agency so it can be attributed not only to nonhuman animals but also environments by releasing it from the confines of traditional humanist models that limit it to human intentionality and subjecthood. At the same time, Barad also situates humans so that they are firmly located within (but not at the centre) of the world (“Meeting the Universe” 206). My focal texts all enact a resituation of human beings and encourage a consideration of the current world becomings on a non-hierarchical or anthropocentric level with careful attention to how non-human bodies, objects, and environments shape us now and in the future. This chapter’s approach focuses on the extent to which uncertainty, relationality, and becomings of life in my focal texts generate a space for critically considering how the environments function to orient readers towards an ecologically

enmeshed and posthuman sense of the world. Through the creation of these transformative spaces, these texts invite new ways to imagine being in and relating to the world.

5.1 Transformative Ecologies: Watts's Unstable Embedded Environments

Climate change is already well underway in Watts's imagined future. Energy needs and too-little-too-late efforts to combat climate change have resulted in the Grid Authority's projects to harness geothermal energy in the rifts to power North America. Environmental solutions and their deployment are controlled by powerful corporations like the Grid Authority. Michael Braun observes "In the *Rifters Trilogy*, science becomes a tool of large corporations, rather than the scientists themselves (who are remarkably absent from the novels)" (72). Watts's concern that the power to affect environmental change or stabilization may sit largely with corporations is a recurring preoccupation of contemporary eco-fiction. Both Bacigalupi's and Atwood's narratives also feature corporations that have access to potentially beneficial technologies but utilize it for exploitative and often harmful economic purposes.

Even writing at the early start of the twenty-first century, Watts predicts human passivity to climate change occurring to such an extent that refugees end up in permanent camps along the coastline (Watts, *Maelstrom* 48). Interventions are too late to help the increasing tides of those fleeing drought, desertification, and flooding. Shelley Streeby critiques the recent popularity of proposed climate change strategies to geo-engineer the environment through carbon storage and sunlight restriction to cool the planet without tackling its root causes, arguing that they are examples of a desired mastery of nature without consequences (3) In a similar vein, Watts's surface world has a few instances of characters referring to or noticing vast networks of kudzu vines that have been cultivated to allegedly save the planet. Early in *Starfish*, readers encounter the following description of the environment:

Green tangled blankets of kudzu⁴ spread out around them, shrouding the roofs of surrounding buildings. It always made Joel think post-apocalypse — weeds and ivy crawling back in from the wilderness to strangle the residue of some fallen civilization. Except, of course, these particular weeds were supposed to *save* civilization.

Way out by the coast, barely visible, streamers of smoke dribbled into the sky from the refugee strip. *So much for civilization* (Watts 65).

The kudzu likely serves as both a carbon sink and a natural cooling/shading method. However, the juxtaposition of the lush green kudzu and its alleged salvation with the impoverished conditions of the climate refugee camps undermines that promised deliverance and strongly implies these actions are much too late to ensure anything other than public passivity by cultivating a comforting belief that everything will be fine while the world continues to burn.

In a narrative that is rife with the complex biological becomings and unexpected consequences of encounters between species and genetics, the *Rifters Trilogy* anticipates our current fixation with geoengineering and technoscientific mastery by alluding to the potential risks and limitations of the projected outcomes of such global projects. While processing the recent discovery of behemoth's invasion from the depths of the ocean to the surface environment, Achilles reflects on the recent history of accelerating invasions that left "whole ecosystems squashed and replaced by exotics" (Watts, *Maelstrom* 118). The invasion has been so complete that Australia's marsupials essentially only exist in a gene bank (119). Kudzu again enters the text with Achilles wondering:

if the vines would be as easy to kill off as everyone expected, once they'd finished sucking up the previous century's excesses. Kudzu had been a tough mother to begin

with, even before all the tinkering that had turned it into God's own carbon sink. . . . Give the weed another ten years and it'd be immune to anything short of a flamethrower. (119)

Attempts to geoengineer the environment through genetically modifying plants into effective carbon sinks might be a less-extreme suggestion than some of the ones currently being touted by climate scientists (such as seeding the oceans with iron or injecting the atmosphere with chemicals⁶¹); however, while the kudzu is presented as a low-risk solution, it also risks becoming another resilient invasive species. Its modifications to become more efficient and potentially difficult to contain also links it to the genetically tweaked adaptive resiliency of behemoth (*Maelstrom* 139-140). These multiple juxtapositions in Watts's texts where feats of human bioengineering to 'fix' the environment end up being mentioned amidst past ecological blunders, invasions, or the unfolding pandemic scenario undermine anthropocentric narratives of environmental mastery. They also draw attention to the complexity of biological systems and the adaptive potential of life. Beyond depicting the evolving power of life in the physical world, Watts also ensures that the biosphere is interconnected to both the virtual environment and the environments within physical bodies. The *Rifters Trilogy* achieves this through diffuse agencies and by resisting the centrality of the human, presenting both a pure-data environment and the human body as ecological systems. Discussing the benefits of distributive agency, Bennett posits that moments of simple cause and effect/ "efficient causality" become impossibly rare (32). Watts's trilogy depicts such causal complexity through the ongoing chain reactions set off by agential becomings across and within bacteria, the rift, human bodies, and virtual spaces.

⁶¹ See Jean-Pierre Gattuso et.al. "Ocean Solutions to Address Climate Change" includes descriptions of the methods of mass-geoengineering being discussed to meet the Paris Agreement targets of 1.5-2 degrees of warming.

5.1.1 Osmotic Interfacing: Virtual Ecologies

Watts's *Rifters Trilogy* is distinct among the texts I examine for its depiction of both a virtual environment and the ecologies within it. In *Dark Ecology*, Morton suggests that "At Earth magnitude, anthropocentric distinctions don't matter anymore. Or, better, they cease to be thin and rigid" (32). Morton goes on to list numerous binary distinctions such as person and thing, life and nonlife, which he argues come to matter differently when removed from their seeming rigidity. Watts's inclusion of scenes set in Maelstrom creates a noteworthy space that undermines such boundaries. Describing common assumptions regarding virtual and real spaces, Elizabeth Grosz identifies among them "the separation of VR from the real and the material, the simulation from the original" (*Architecture* 81). Watts's description of the evolution from our present-day Internet into Maelstrom critiques the vision of passive cyberspace recognizable in many of the earlier cyberpunk works,⁶² stating that "The term cyberspace lasted a bit longer— but space implies great empty vistas. . . . No sense of the meatgrinder in cyberspace. No hint of pestilence or predation, creatures with split-second lifespans tearing endlessly at each others' throats" (*Maelstrom* 41). Watts's virtual system is not just a virtual reality, it is an ever-evolving ecosystem complete with its own wildlife and competitive Darwinian evolution affected by the millions of human users interfacing with it by the second. Describing how some artificial life researchers argue for the need to understand their work as synthetic biology which "constitute a life-form of their own," Ursula K. Heise argues that it "entails a very different understanding of the digital medium as not only a tool for representing and understanding nondigital phenomena, but as an environment that can function as an 'alternative nature' with its own 'ecosystems,' 'organisms,' and 'physical laws'" ("From Extinction to Electronics" 67). Watts employs a form

⁶² Perhaps further subverting the transcendent desires of cyberpunk techno-fetishists, the virtual "Lenies" are mindless, destructive programs/malware, rather than a heightened coalescence of mind without body.

of synthetic biosphere and ecology, especially in his explanations of virtual entities' choices/behaviour. One example is the smart gel's preference for simpler systems developing out of its initial conditioning to "protect data from Internet wildlife" (*Maelstrom* 16). The boundaries between the biosphere's physical ecology and Maelstrom's virtual ecology cease to matter on a broader scale; Maelstrom has its own forms of evolutionary processes in terms of constantly shifting virtual cycles of competitive and cooperative evolving life. Virtual/a-life and nonlife become mere facets of a more complex, interlinked assemblage where human systems live off the virtual systems and the virtual wildlife live off each other and human-driven niches.

The previously established mutual dependency between the virtual and physical worlds and their health further supports this enmeshment in the boundary crossings that occur through Lenie and β ehemoth's multiple forms so that β ehemoth becomes a meme that enters Maelstrom (*Maelstrom* 16). Rather than burn out, it instead ends up going viral virtually, paralleling its physical bacterial strain being spread around the biosphere. However, this connection between Maelstrom and the biosphere is not simply demonstrated by β ehemoth's or Lenie's translation into code. Grosz suggests virtual reality promises the potential for subjects from different species locations to "come together," and "interact, through a computer terminal, with each other and with their shared environment" (*Architecture* 41). In the *Rifters Trilogy*, individuals can interface with Maelstrom through various devices; they can also encounter virtual entities such as the gels or Madonnas and virtually inhabit distant spaces through devices like the headset that links Sou Hon to the botflies so that she can patrol the refugee strip (*Maelstrom* 26). Such connections set up a highly fluid boundary between the material and the virtual. This periphery is further dissolved through Lenie's interactions with the virtual assemblage that becomes Anemone and her own translation into the Meltdown Madonnas/Shredders. By establishing these multiple

interconnections, Watts ensures that even the entities in his virtual spaces are entangled with material systems in a networked assemblage where they co-constitute each other.

In *Vibrant Matter*, Bennett argues that adopting a politics of vital materialism would offer a “greater appreciation of the complex entanglements of humans and nonhumans,” and that it “captures an ‘alien’ quality of our own flesh, and in so doing reminds humans of the very radical character of the (fractious) kinship between the human and the nonhuman” (112). “Barad, too, asserts the need for a redefinition of agency so that it is not something attributed only to humans and some nonhumans (*Meeting the Universe* 172). Under anthropogenic climate change, Barad’s position generates tension through its removal of humans from a central position in the world’s processes of meaning-making while still maintaining they have a responsibility for their role. I suggest this tension is necessary to help redefine meaning and agency so that responsibility cannot be determined to end merely with a self-contained human subject. Watts’s work takes a similar approach through the numerous nonhuman agents that shape outcomes in the world, Anemone and β ehemoth being two such examples. Watts’s enmeshment of characters with technology, digital life, and bacteria emphasizes a form of materialist politics that decenters anthropocentric mastery and reconstitutes his characters as ecologically entangled.

Watts goes further than merely establishing the assemblage through the osmotic exchange of physical and virtual, human, and nonhuman by linking the very health of the environments. Five years after β ehemoth, both worlds are in a state of worse ecological crisis with the environment and society having been devastated by the pandemic and destructive attempts at containing its spread. In one of the burned containment areas, Taka, Lenie, and Ken witness “a land blasted and scoured clean of any live thing” filled with “ash and soot” (Watts, *Seppuku* 69), eventually coming to a mostly brown and decaying landscape with “patches of

other mold smothering the grass, or spreading across the trunks of trees” as they die off from *Behemoth* (70). The post-apocalyptic landscape emphasizes the devastation of the practiced burns to contain major outbreaks and should make the dire situation quite apparent to readers. However, burns performed by CSIRA agents like Achilles were already a normal containment practice for infectious diseases. The environment was also, as noted, already suffering the effects of unchecked climate change and an inability to keep up with ever-increasing crises. Achilles reflects, “The system had been degrading for decades. Centuries even” (*β-Max 143*). Had *Behemoth* never occurred, “they could have bought another decade or two, a little more time for those who still had faith in human ingenuity to go on deluding themselves” (144). Taka later expresses to Lenie that even before *Behemoth* everything “was dying anyways, just perhaps not as fast” (*Seppuku 74*). Amidst the background of entropic decline, *Behemoth* is simply a catalyst, speeding up the anthropogenically created series of catastrophes.

The virtual world has also suffered in terms of its ecological health. In the same scene where Lenie, Ken, and Taka are passing through the ruined landscape described above, it is revealed that N’AmNet—North America’s once uncontrollable virtual sphere teeming with e-life—has in the five years since *Behemoth* become so damaged that most of the digital lifeforms “went extinct from habitat loss” (*Seppuku 75*). Taka is only able to know for sure that this occurred on the North American side since, much like the afflicted continent, it has been virtually partitioned off. The die-off of life on land is juxtaposed with the mass-extinction occurring in its virtual environment with Maelstrom losing 90% of its wildlife (*Seppuku 122*). As with many of Watts’s scenes, such juxtaposition of plagued and virtual landscapes emphasizes the bleeding of these two environments, granting a material value to the virtual world and its mass-extinction by connecting it with the physical world through a series of embedded

connections. It also furthers the reader's understanding of this relationship as mutually affective; the virtual world is no longer just data, it is dynamic, lively, and equally under threat. Both organic and inorganic life as code in the *Rifters Trilogy* proves "equally amenable to infection" (Eldridge 222). The detailed and sexualized descriptions of 400 Megabytes' replication (Watts, *Maelstrom* 183-85) and descriptions of the virtual wildlife such as the Madonnas as being shaped by "natural selection . . . for over a billion generations" (*Seppuku* 192) also help define the artificial denizens of the virtual sphere with distinct liveliness so that they become more than mere code or programs, furthering the recognition of the importance of preserving diverse environments.

5.1.2 Body Ecologies

While Lenie's actions greatly impact the ecological becomings in her world, she is also shaped significantly by the rift's environment. Despite the GA's modifications that are meant to pre-adapt her for the rift, Lenie does not initially find herself mentally prepared for it. Her early experiences of her machine parts activating as she enters the rift are likened to drowning with dropping into the abyss, giving her the urge to scream (Watts, *Starfish* 21). However, the rift enacts its own form of agential/vital force in shaping its denizens. Alaimo suggests that to re-imagine corporeality as trans-corporeality means that the human is always entangled with the world beyond its boundaries and emphasizes "the extent to which the substance of the human is ultimately inseparable from 'the environment.' It makes it difficult to pose nature as mere background...for the exploits of the human since 'nature' is always as close as one's own skin—perhaps even closer" (*Bodily Natures* 2). From the very opening of *Starfish*, the rift is described as a constantly active force "tearing open the seabed with strength enough to move a continent" (Watts 19). This force transforms Lenie and the others into rifiers in the truest sense so that it

soon becomes a space more comfortable for them to inhabit than the claustrophobic enclosure of Beebe station. Indeed, Wall observes that the rift is transformed from a hellish abyss into a place where the rifters find pleasure and solace in the darkness (69). After Lenie has lived in the rift for a while, “It feels like being born again” (42). The rift has become a transformative space, one where Lenie finds renewal and resilience.

While it is easy to conclude that the GA’s changes are solely responsible for Lenie’s new experiences, she acknowledges that “The rift is the real creative force here, a blunt hydraulic press forcing them all into shapes of its own choosing. If the others are anything like her, it’s because they’re being squeezed in the same mold” (77). Lenie’s belief in the power of the rift as a force that shapes life draws attention to its active power and the interconnections between the environment and the bodies inhabiting it. Taking an approach that emphasizes these entanglements allows “us to forge ethical and political positions that can contend with numerous late twentieth- and early twenty-first-century realities in which ‘human’ and ‘environment’ can by no means be considered as separate” (Alaimo, *Bodily Natures* 2). Watts’s depictions of ecological adaptation include an active environment that shapes the bodies of its denizens. The very landscape of the rift and the mentalities of the rifters also create uncertainty and instability reflective of both the environment and the outcome for the biosphere, undermining assumptions of human control over the global and virtual ecosystems. Eldridge observes that:

Watts’s series necessitates a toppling of the human from its self-(pro)claimed pedestal and acts as an indictment of the longstanding artificial division between the human and natural worlds; a divide which has been exponentially exacerbated by the fantastical neoliberal doctrine of perpetual growth that designates the natural world as an externality. (229)

The violent collapse of certainty and human control may leave readers disoriented and feeling horrified for two reasons. The first is that it demonstrates the sheer power of the environment as a force that actively shapes us even as we shape it—a fact that Watts demonstrates through multiple descriptions of the dynamism of the rift as an unstable and inhospitable environment complete with “mudslides and smokers and giant fish trying to eat you all the time” (Watts, *Starfish* 44). Secondly, it reveals a level of entanglement that undermines the privileging of humans as the central active force in the world. The rift is not an environment that is tamed by humans, even their colonization of it is at risk of annihilation from sudden geological activity.

One way that Watts undermines anthropocentric power and agency is by presenting the body as an environment in and of itself. In *Ecology Without Nature*, Morton observes “we are the world, unfortunately,” suggesting that turning the body into an environment is one such resolution to the complex paradoxes of it being “a palimpsest of symbiotic organisms” (108). In the *Rifters Trilogy*, bodies, organisms, and virtual spaces are environments where their biotic or virtual diversity is always in a form of Darwinian competition and potential risk of invasion from less-beneficial organisms. By understanding a gene, or organism as a form of assemblage it can be conceived of as “a response to the environment in which it is embedded and with which it must ‘harmonize’ to survive. Our environments guide us in becoming who we are in a most material sense” (Fishel 73). Lenie embraces her body as an environment after her discovery that she is a vector for β ehemoth, participating in a destructive trek across the continent and even engaging in sexual acts to intentionally spread the infection (*Maelstrom* 230-31). Barad’s argument regarding the environmental co-constitution of bodies informs the reading of Lenie’s body as a biosphere. According to Barad, “Bodies are not simply situated in, or located in, particular environments. Rather ‘environments’ and ‘bodies’ are intra-actively co-constituted”

(*Meeting the Universe* 170). Watts's depiction of the body as an environment destabilizes the borders of the bounded self. Humans and rifters alike are embedded in an ecological assemblage defined by an osmotic relationship with the inner and outer environments—one where Seppuku establishes an even deeper level of entangled agential power due to its potential to transform all life from the inside out.

Estrangement also plays a role in how Watts's narrative serves to reorient the reader. Watts's microbe permeates not only bodies but also the soil and landscape. It is shaped by both humans and the rift and it enacts its own agencies on them. This extensive bacterial pollution of bodies and landscapes makes it particularly threatening. Alaimo's discussions of the Human Toxome Project⁶³ assert that it contributes to estranging humanity from the idea of the bounded human by emphasizing the toxins in the body that have been incorporated through constant contact with the external environment so that "bodies become coextensive with place" (*Bodily Natures* 110). Watts's depictions of the microbial permeation of bodies and the body as an environment highlight bodily entanglements in ways that are often taken for granted. The bacteria that compose the microbiome act as vital borders between our bodies and the environment. Despite the global impact of infections, due in part to their small scale, bacteria and viruses do not register as being of political significance except those threatening the world with a pandemic (Fishel 55). Thinking of the body as an environment thus presents a point of critical reorientation that disrupts the totalizing agential power attributed to the human subject.

Watts's focus on infection/microbial invasion also helps emphasize and develop an understanding of the dynamic networks between bodies and their environments. Fishel notes a shift in contemporary discussions of the microbiome where human bodies are rethought as

⁶³ The Human Toxome Project states its goal as "working to define the human toxome—the full scope of industrial pollution in humanity".

“‘planets’, superorganisms’, and ecosystems’ with the microbes to act as agents who help maintain health, thus being understood through their microbial partnerships as ‘*lively vessels*’” (57). Just as the body is an environment teeming with microbial partnerships, it can also be at risk of invasion from external species. Morton suggests “A human being is an ecosystem of nonhumans, a fuzzy set like a meadow, or the biosphere, a climate, a frog, a eukaryotic cell, a DNA strand” (*Dark Ecologies* 71). In the *Rifters Trilogy*, the risk of becoming a host to Behemoth establishes nature and the threat of invasive ecologies as an integrated part existing in the human, something that must later be embraced in the decision to gamble on *Seppuku* and accept its host of additional viral organisms to unknown effects. Based on the multi-jointed insects emerging, it may well contain unimaginable changes for humanity (Watts, *Seppuku* 73).

Shaped by both the rift and humanity, Behemoth might be thought of in terms of invasive life, especially in how it is initially spread unintentionally. While we tend to think of invasive species as being complex life forms, some of the deadliest come not from the species themselves, but from the diseases that those species’ bodies act as host environments for. Like an invasive species, Behemoth can perniciously outcompete and spread efficiently on land using a multitude of species as hosts (Watts, *Maelstrom* 130-31). Frawley and McCalman suggest that our approach to invasiveness and our idealization of “past ecologies” will likely need to be rethought since the removal of entire *invasive* populations “is unlikely to prove as viable and defensible as it has in the past” (10). While *Seppuku* is also an invader, one sent by missiles into North America, its open potential to enact change without the permanent removal of all the infected bodies resists that idealization of a lost ‘pure’ nature, instead, adaptation is embraced in support of survival and biodiversity.

Eldridge briefly discusses the embeddedness drawn between bodies and landscapes through a narrative of invasion and infection in Watts, observing that the connection between the virtual and physical infections through the nature of code/DNA suggests an additional association exists between the virus and humans in that “The infective potentiality of the natural virus displays a remarkable affinity with the human species as a whole; we also colonize and reshape our environments to increase our ability to proliferate. The major difference is that humans do so to the point of the destruction of the original host environment” (227-28).

While many viruses also destroy their host environment, Eldridge’s point regarding human activity as being like its own form of invasive force upon ecologies that reshapes and colonizes them offers a potent deanthropocentrized perspective on humanity’s spread around the planet. It also effectively connects humans in the *Rifters Trilogy* to both the invaded environment and the invasive infection that embeds them firmly within a non-hierarchical ecological assemblage. However, Eldridge does not link this viral metaphor of humanity to the ending of the text. Many viruses have demonstrated a trend of becoming less deadly over time (Goodman 42); some even mutate to become beneficial to their hosts. The ending of Watts’s trilogy where Seppuku has now inserted radical becomings into all eukaryotic cellular life becomes one transformative process where the body must welcome those foreign genes and bioforms into itself for a chance at survival. If humans are viruses to the ecosystem, arguably, they might also mutate to become a less deadly or even beneficial one.

Behemoth’s open ending further maintains an assemblage position of enmeshment by resisting both the anthropocentric impulse to control and manage nature and the fantasy of techno-scientific preservation of the environment through human intervention. Human extinction, according to Claire Colebrook, is frequently portrayed as the end of the world leaving

“no conception of extinction as an inhuman event, either as a sense of the loss of life beyond what it means for humans and their recent attachment to biodiversity, or a sense of a certain mode of humanity reaching its end and giving way to other forms” (“The Future in the Anthropocene” 267). Both Watts’s and Atwood’s trilogies orient away from this position by suggesting that something may live on, just not necessarily humans (as we know them). Watts’s trilogy is particularly well-suited to having readers rethink their anthropocentric notions of apocalypse because there are no quasi-human beings set to surpass humanity to ease the existential anxiety, thus challenging readers to consider if the globally warmed, burnt up, post-βehemoth world is really more apocalyptic than a world without humans.

5.2 Unregulated Landscapes and Active Soil in Lai’s *Salt Fish Girl*

It is somewhat surprising that despite much work exploring cyborg, racial, and queer politics in *Salt Fish Girl*, there has been a rather limited focus on the role of climate change or eco-feminism in her text⁶⁴. The Unregulated Zone features prominently in Lai’s novel. While corporate compounds such as the one Miranda grows up in guarantee the safety of their food from genetic pollution—and presumably other contaminants—those in the Unregulated Zone face no such security. It is a zone of risky living, one made necessary by the corporations to enable their lifestyles (Lousley, “Ecocriticism” 155). While I have previously discussed the biopolitical and posthuman dimensions of food in Lai’s text, there is a further element to the Unregulated Zone that is important for reading it in the context of a climate change narrative, that being how environmental changes relate to economic, agricultural, and ecological insecurity in the future. Much like Watts’s trilogy, the warming climate has likely contributed to the

⁶⁴ Nicholas Birns’s article “The Earth’s Revenge” discusses ecofeminism in regard to Lai’s “garden” nomenclature. Cheryl Lousley has written on the spectral and material semiotic features of the bodies and environments *Salt Fish Girl* in “Spectral Environmentalisms” and “Ecocriticism in the Unregulated Zone”.

collapse of nation-states into communities of carefully regulated compounds that trade security and relative safety for privacy while the impoverished Unregulated Zone exists outside the compounds where corporate citizens are not supposed to visit (Lai, *Salt Fish Girl* 14). In contrast to the compounds, the Unregulated Zone is presented as unsafe, “dirty” and “foul-smelling” (37). While Lai does not specify what has resulted in such economic and social inequalities, instances such as the growing unrest in the compounds throughout the novel and the presence of a “bombed-out building and empty windows” (39) amidst a globally warmed landscape of decay and poverty certainly offer some hints. How the world got this way is an example of what Sharlee Reimer calls the “logical gaps” in Lai’s text which informs the white patriarchal capitalism that situates the novel’s global and political setting (“Logical Gaps” 62). While climate change and genetic pollution are never explicitly named as the causes, the food security offered by the compounds and their worries of genetic contamination implies that ecological instability is a contributing factor.

Despite the warming world, those in the compounds appear to behave as if nothing has changed or with passive resignation; wealthier families own expensive VR suits that let them invisibly explore “Real World,” their virtual reconstruction of the world outside the compound (65), and Miranda grows up with interactive comics full of consumer ads for products like Pallas Shoes (35). Western culture's colonization and exploitation of land and bodies as resources continue in the compounds, as implied by the authorized products citizens are expected to buy. Compared to the Unregulated Zone, the compounds can be positioned as an attempt to further separate humans from ‘unregulated’ nature. All the food in the compounds is guaranteed “safe” from genetic contaminants and likely engineered—such as the Saturna Gala apple that is big enough to feed Miranda’s entire family—implying its genetic modifications, in contrast to the

food in the Unregulated Zone which Miranda's father claims has "been affected by these modified pollens. If it grows wild in the Unregulated Zone you have no idea what kinds of mutations have occurred" (32). The compounds promise safety but are also the ones responsible for that genetic waste ending up in the Unregulated Zone in the first place. Unlike the predominantly white Saturna Compound, many of the people in the Unregulated Zone are people of colour, a fact which draws attention to the disproportionate impact that global climate change has on minority and non-western communities.

Such patterns of consumption are unsustainable, and the fears around the Unregulated Zone and environmental exposure to mutation suggest general anxiety around both the food and the bodies of the people that eat it due to uncertainty surrounding its safety and effects. This anxiety regarding life outside the compounds marks a noted contrast to the complacency with which characters like Aimee (Miranda's mother) accept the estranging future landscape. When Aimee spies the durian tree and wants to eat some of its fruit, her husband expresses concern regarding its safety since the fruit is unnaturally growing in a non-tropical area. She casually responds, "So the world has warmed up since we were young . . ." (Lai, *Salt Fish Girl* 209). Aimee's nonchalant acceptance of the changing climate not only anticipates how quickly climate change can accelerate in one lifetime but also how easily it might be normalized because it is easily obscured and often expressed in abstract measurements. Written around the completion of the Human Genome Project when genetically modified food was highly controversial, Lai's novel presents the environment as one rendered weird and unpredictable due to human actions. The landscape is not the West Coast North American readers will recognize; the prevalence of the effects of technoscience being distributed throughout the landscape, as well as the lack of

safety affiliated with its food and soil due to genetic contamination, draw attention to pollution as a hyperobject and the responsibility shared by those entangled with it.

Both Lai's and Bacigalupi's texts portray futures that are estranging due to climate change. Hyperobjects such as climate change seem to be conceptually more challenging to accept than cosmic or natural phenomena that cause disasters such as storms or meteor strikes (Morton, *Hyperobjects* 15-16). Morton suggests that hyperobjects possess viscosity in their vastness of scale which instills in them the quality of unreality (32). In Lai's case, both the dreaming sickness and her temporal and ecological shifts and transformations alienate the reader, drawing greater attention to the genetic pollution and changes occurring in bodies and landscapes in the text. While *Salt Fish Girl* frequently positions climate change in the background, it still establishes a tense reminder of its estranging potential through the text's disorienting setting and character reactions to the 'unnatural' landscape (such as Aimee's reaction to the durian fruit).

In *Queer Phenomenology*, Sara Ahmed defines disorientation as a "bodily feeling of losing one's place, and an effect of the loss of a place" and further argues that it "involves failed orientations" where "such objects 'point' somewhere else or they make what is 'here' become strange" (160). One might then read Lai's text as employing a globally warmed setting and its normalization for those characters inhabiting it to intentionally create an experience of disorientation for readers. The durian acts as an object of orientation for Aimee, connecting her with her cultural roots and, later, connecting Miranda to her mother. At the same time, its presence on the landscape is not 'natural' in that ecology and is jarring to contemporary readers, thus creating a moment where climate change is rendered visible in the dissonance between contemporary ecologies and the imagined future⁶⁵.

⁶⁵ This is not to ignore the additional shared symbolism of the durian connecting with Aimee in their shared status as being perceived as "foreign" bodies in a Western landscape.

As with the *Rifters Trilogy*, the background presence of climate change and the ecological fluctuations that have occurred under it are also a reminder of invasive ecologies, something that is highly ambiguous—if not outright undermined—in the connections between the durian fruit and transnational identities. Birns argues that the durian is “a felt consequence of global warming” (4). Miranda’s father Stewart’s inherent anxieties regarding his family’s otherness as a non-white minority in the compound are juxtaposed with his environmental concerns, making the durian a potentially threatening object possessing unregulated capabilities. Invasion fantasies are a common trope used to control and manage the populations of flora and people of colour (Caluya 36). The ecological anxiety around the foreign durian and the internalized xenophobia present in the compounds is elided when Stewart vents his frustration regarding Miranda’s scent, saying to Aimee, “I should never have brought you that evil fruit . . . Only barbarians eat those kinds of things. You know if it doesn’t have a Saturna sticker it isn’t safe. Everything has been affected by these modified pollens. If it grows wild in the Unregulated Zone you have no idea what kinds of mutations have occurred” (32). Stewart’s connecting the fruit with barbarism reveals an internalized Western fear of Asian cultures. His conflation of the durian with mutation and uncivilized peoples also suggests an implied lack of common sense among those who refuse to eat compound-controlled foods (P. Lai 179). His reaction further blurs the social and ecological anxieties together through the fear of genetic contamination. As Paul Lai observes, the description of the durian’s smell constructs it as “an uncanny, alien, and dangerous fruit” (177). The scent “signals spatial difference, juxtaposing the ‘subtropical’ outside of the Unregulated Zone with the corporately-sanctioned space of Serendipity” (177). Scents, in general, permeate *Salt Fish Girl* in uncanny ways, often connecting to cultural memories such as the durian or Evie’s salt fish smell. “Odours,” according to Lousley, “produce

an uncanny ecological re-membering” in Lai’s narrative (“Ecocriticism” 154). As a part of the environment, these uncanny odours can be thought of as a form of ecological awareness as well as a form of pollution, giving them an ambiguous meaning that further layers the interconnections of race, memory, bodies, and environments.

Lai’s use of scents as a means of having the past permeate the future also creates an uncanny trace. Using the term “dark ecology,” Morton argues the need for an ecological awareness that embraces the weird and uncanny (*Dark Ecology* 5). Morton likens dark ecology to noir in the sense that we are both the “detective” discovering facts around climate change and the “criminal,” perpetrating individual acts that in themselves do little harm but culminate in destroying the environment as a species. Ecological awareness becomes the moment where we as individuals discover our own culpability (*Dark Ecology* 8-9). The scents in *Salt Fish Girl* that carry from the colonial past to permeate the future draw awareness both to an individual’s situated responsibilities regarding the environment and to the colonialist conquest of it.

5.2.1 The Power of Soil and Water

Insecurities resulting from pollution, xenophobia, and technologies all converge in the ‘unregulated zone’ of climate change. The growing concern regarding ecologies and the safety of foods in a future of genetic modification is envisioned through depicting a world where being in the environment risks spreading the dreaming sickness—presumably through contact with the landscape, which has become polluted by human activity. The dreaming disease is believed to be transmitted through direct skin contact with the soil and doctors in the novel speculate that it “might be the product of mass industrial genetic alteration practices—that the modifications of agricultural products in recent years had contaminated the soil, that the microbes that lived in the earth were mutating and infecting humans” (Lai, *Salt Fish Girl* 102). Georgi observes the mixed

rumours that both connect the disease with the soil as well as to the Pallas sneakers which are advertised to protect against it, noting “it also rumoured that the shoes transmit the disease, in which case the sneakers again come to signify the omnipresence of global market control” (164). Pallas markets the shoes as a product to protect people from exposure to the soil rather than attempting to perform restorative work to the ecology itself. They continue to propagate the necessity of separating humans from nature through technology and environmental control, thus suggesting that the pollution in the soil is okay so long as one can afford the protective measures to keep it from affecting them.

Miranda’s suggestion that Pallas should advertise their new shoes as protection from the dreaming disease with “Memory-proof” soles (*Salt Fish Girl* 244), further connects capitalism with this nature/culture division in its attempt to establish a barrier between both the soil and situated memory. Engaging with Monica Chiu’s work exploring how the concept of dirt and filth becomes an attribution Asian American women struggle to resist in contemporary Asian American fiction (1-2), Lousley argues that Lai presents pollution as both a social and ecological construct (“Ecocriticism” 153). The shoes mark the nexus of affiliations with dirt/soil, the racialized Sonias who manufacture them, the dreaming disease, and the Unregulated Zone. The meeting of these associations also helps readers draw a connection between Pallas’s factory being in the Unregulated Zone and its use of the unregulated labour of the ‘polluted’ Sonias with a lack of environmental laws for waste from their factories.

While the soil in Miranda’s future is generally perceived as a source of contamination and disease by the population, it is also instilled with its own potentiality. “Dirt,” according to Alaimo, “demonstrates an agency without agents, a foundational, perpetual becoming that happens without will or intention or delineation. And yet, dirt . . . is necessary for the emergence

of less diffuse life forms” (*Bodily Natures* 145). Sullivan echoes this assertion, noting that in being composed of both “organic and inorganic matter . . . soil actively participates in small-scale ecological processes that are themselves integrated into the larger niches of other assemblages” (“Dirt Theory” 516). Beyond its potential to infect bodies with the dreaming sickness and historical memories, Lai emphasizes the liveliness of the soil by making it the substance Nu Wa uses to create people. Nu Wa opens the text reciting her story of creation saying, “The materials of life still lay dormant, not yet understanding their profound relationship to one another” (*Salt Fish Girl* 1). The mud from which she crafts people seems to resist her intentions and is described as “slippery” and “hard to control” (2). The mud’s characterization as both an animating and resistant force remains present in the people she has created who immediately look upon her with derision (3). Thus, the soil is what connects people to their primordial muddy origins and roots, despite attempts to separate bodies from it. Sullivan argues that our bodies and minds are enmeshed in environments “which shape us just as vividly as we shape them” (“Dirt Theory” 528). In *Salt Fish Girl*, humans are bound to their material origins by the very substance that the people in Miranda’s future fear.

Lai’s connecting dirt as the substance from which life is created blurs the binaries, not only in the origin stories she undermines, but in those of organic/inorganic, natural/artificial, and living/dead. One does not normally perceive dirt as being an active force, yet in *Salt Fish Girl*, the soil possesses quasi-agential power to affect and infect bodies. Dirt connects the bodies to other life forms as well, not just to the microbes it might harbour but also to the plants that are grown and then eaten. Dirt is transformed into flesh through food but, unlike food, dirt as the “matrix of life” resists presenting nature as an all-consumable object (Alaimo, *Bodily Natures* 12-13). Thus, dirt becomes the assemblage from which both people and the durians are made.

The durian is also connected to the primordial muck through its ability to transform matter into organic life. Birns argues that despite Serendipity's attempts to control life, the durian embodies nature's ability to survive and withstand it (4). I suggest this argument also extends to the soil; despite the ambiguity around the threat of the dreaming sickness, its force on human bodies to continue to support and sustain life further attests to this resilience. While both the durian and the soil have the agentic potential to affect bodies, Lai positions the soil as being more ambiguous in that respect—in no small part due to the mutual ways it has been shaped through its contact with humanity (in this case, through genetic pollution). Orientations involve work (Ahmed 100). Lai's connections between soil, food, scents, and bodies aim to orient readers away from the 'bifurcations' that fill her narrative, towards a more embedded ontology.

Beyond the soil, water in *Salt Fish Girl* also helps to emphasize the vibrancy and transcorporeal forces of the environment. While Nu Wa shapes people from the mud, that mud is only malleable because of the water coming from the river itself—the river which she claims has been there right at the beginning with her. The water from the river is also described as having a primordial smell like rotten eggs which Nu Wa identifies as “the stink of beginnings and endings” (Lai 2). Her description of it emphasizes its organic potential as well as its ancient presence at the start of creation. This 'lively' water also frames those beginnings and endings in the narrative as the story both begins there and ends in a very similar moment of creation with Evie and Miranda's birthing of her child in the hot spring she describes as “an ancient ocean bubbling up through the rocks” (269). Discussing the dreaming disease's connection to water and Miranda, Aimee, and Evie's ancient 'fishy' origins, Elizabeth Harmer argues they all indicate “the circularity of the narrative of history; in this novel what we once were is also what we are going to become” (8). The water in the text causes the narrative to flow back onto itself as a

textual sort of ouroboros. It also situates and connects all life through the river that enabled the mud to be pliant enough to create people. As Astrida Neimanis argues, "watery embodiment is something that we live" (49). Water is not simply a part of the environment; it is an inseparable part of our materiality (21). Lai emphasizes this inseparability through the conscious sense of connection and longing in the bodies and minds of those afflicted with the dreaming sickness so that they only find solace in water (*Salt Fish Girl* 85), with many walking into the sea as if attempting to return to their lost aquatic pasts.

The polluted environment, ocean, and bodies highlight the enmeshed and embodied connections between humans and the landscape—both land and water—in ways that challenge the borders of the self-contained individual and seek to reorient us towards a sense of shared belonging, becoming, and responsibility. Neimanis argues that “as bodies of water we leak and we seethe, our borders always vulnerable to rupture and renegotiation” (2). Water and fluids course through Lai’s text as vibrant animating sources that connect and transform bodies. The river is not the only creative force; the durian that Nu Wa crawls into also appears to have the power to pull Aimee and Miranda towards it (Harmer 7). Nu Wa is actively transformed by the durian that encases her, its juices working at her skin and making her a part of it (Lai, *Salt Fish Girl* 209). Such fluid exchanges and becomings along organic lines also occur at the cellular level as the durian’s genetics allow asexual reproduction of women who eat them. Fishel argues, that the body as a “self-contained individual” is a myth as organisms, cells, and their genomes are all part of larger shifting assemblages where organisms emerge discursively (68-70); Lai’s fluid exchanges and becomings suggest a similar idea in the fluid barriers of the body and self. Symbiosis teaches us “the human is an integrated colony of amoeboid beings. . . . Like it or not, our origins are in slime” (Pearson 124). In the context of *Salt Fish Girl*, our origins are in water

and muck; however, the lesson remains the same: our bodies are embedded environments sharing origins and becomings with others in the eco-assemblage of our world.

5.2.2 Toxic Ecologies: Bodies and Landscapes

Both the soil and clones in *Salt Fish Girl* are perceived to be polluted bodies and vectors for the dreaming disease. The genetic waste in the soil presents a warning regarding the unexpected side-effects of biotechnology and the need for using it responsibly, something that becomes increasingly apparent in Bacigalupi's and Atwood's narratives⁶⁶. In *Salt Fish Girl*, the dreaming disease offers an example of a level of enmeshment along trans-species and organic lines where memories are crossing the boundaries from soil to humans. Alaimo's trans-corporeal politics suggests such an emphasis on exchanges across substances and within the body to be significant in revealing not only how they travel but also "how they *do* things—often unwelcome or unexpected things" (*Bodily Natures* 146). In Alaimo's work, human bodies are both matter and an environment through how they host bacteria and in the base materials comprising their organs, presenting "a kind of enfolding in which everything presumed to be outside of the properly human is always already within" (*Bodily Natures* 155). Similarly, *Salt Fish Girl* underscores the unexpected side effects of the eco-genetic pollution in its narrative through the bodily symptoms that affect a broad range of interconnected beings inside and outside of the compounds. Those afflicted "reeked of oranges, or tobacco, or rotten eggs, or cabbage. Or else of silk, of cotton, of coffee, of blood and carnage, of coal, of freshly baked bread, of machine oil, of dust and rain and mud" (L. Lai 70). Those afflicted exhibit their contamination through scents that penetrate the bodies and spaces of those around them, thus rendering them a toxic body.

⁶⁶ With the present growing concerns regarding microplastics circulating in the ocean, soils, and human and nonhuman animal bodies, Lai's genetic waste speaks to yet another hyperobject with yet uncertain effects on our internal and external environments.

They also contaminate the present, appearing as “persistent, excessive, bodily reminders of the past” (P. Lai 182). Doing so reveals the omnipresence of how the effects of toxic hyperobjects and hegemonic injustice continue along temporal lines. The effects of climate change currently experienced stem from carbon released before us; consequently, the effects of our use of fossil fuels, plastics, and chemicals will have consequences for generations to come.

Alaimo argues the existence of the toxic body “still mixes things up since the same chemical substance may poison the workers who produce it, the neighborhood in which it is produced, and the web of plants and animals who end up consuming it, the traffic in toxins reveals the interconnections among various movements” (*Bodily Natures* 18). In *Salt Fish Girl*, the genetic polluting substances have affected both human bodies and the soil, leaving one to wonder what other effects they may have. Discussing genetic epidemiology’s focus on the interactive forces at play between human genetic and environmental forces, Sara Shostak argues the “Environmental genetic body is porous” in that it takes in what it comes in contact with from the environment which changes it at the cellular and molecular levels (2338). Both Evie and Miranda carry within their bodies an environmental inheritance as well as a hereditary one. This dual inheritance is further highlighted by the fertile powers of the transgenic durians and their ability to allow women to asexually reproduce by consuming them. Food is the most tangible trans-corporeal substance because consumed plants and animals are converted into human tissues (Alaimo, *Bodily Natures* 12). All the scents mentioned in the previous paragraph in *Salt Fish Girl* are consumable products that are globally traded, alluding to not only the effects of capitalist consumption acting on the body but also its own material history. As Alaimo notes, humans are situated through “an environmental inheritance of sorts” that one passes down genetically (*Bodily Natures* 106). Miranda’s own body is situated both genetically and

environmentally through connections to fish, her mother, the durian fruit, the dreaming disease, and even Nu Wa.

Both Watts's seppuku infection and Lai's dreaming sickness foreground assemblage interrelations between the bodies of humans, animals, and bacteria. In Watts's case, the body is treated very much as a permeable environment, one where new potentialities are opened when Seppuku introduces its host of new genes into the one's cells. In contrast, Lai's situates the corporeal identity in connection with other bodies and histories through the dreaming sickness—which both lives in its hosts and the soil, destabilizing time and identities through the memories it imparts. Both Watts's and Lai's positioning of bodies in their texts are akin to how Bennett locates matter as gaining meaning through its entanglements and processes of relations, suggesting that the environment existing in our bodies binds us to all other lifeforms (116). The inherently polluted state of the human and the fact that its body is also an environment can “be understood as a novel way to imagine connections between nature and culture” (Fishel 67). Watts and Lai share a destabilized depiction of nature and culture as already thoroughly bound together through their processes of meaning. In Lai's case, the text's multiple origins for the dreaming disease, Miranda's birth, and even her fistulas, render nature and culture inseparable and bind genetics to just another form of narrative, ‘polluting’ it as a nature-culture hybrid.

5.3 Rethinking Niche and Nature in Bacigalupi's *The Windup Girl*

By the publication of Bacigalupi's *The Windup Girl*, cloning and genetic technologies had advanced considerably compared to the early 2000s. While many Anthropocene theorists refer to the ‘great acceleration’ as a defining feature of industrialized activity that separates it from the Holocene era (C. Hamilton 2), Bacigalupi sets his text in the post-acceleration crash referred to as the “great contraction.” Responding to Norman Meyer's term “the great dying,”

Schuster juxtaposes the rapid vanishing of animals from the biosphere with the ‘great acceleration’ for humans and technologies (“Sustainability” 101). *The Windup Girl* demonstrates the ease with which history is forgotten by having our current time of late capitalism referred to as the “Expansion,” a time that the calorie and gene-hacking companies are trying to resurrect (Bacigalupi 231). The mistakes of our human-driven climate disaster and the ultimate devastation caused by pursuing “money and fairy tales of economic growth” (Thunberg) have clearly not been learned. Examining the continuing waste of hydrocarbon economic production, Michael G. Ziser contends that “American modernity will begin to re-experience moments in its cultural past as the materially conditioned facts of its present and future” (182). In *The Windup Girl*, those living in its future setting have suffered terribly due to corporate biogenetic warfare and the massive environmental and economic crash facilitated by our present trajectory, thus holding up a mirror to our ongoing acts of environmental damage.

Like *Salt Fish Girl*, *The Windup Girl* presents readers with a disorienting landscape that further emphasizes the ecological problems which may result from the misuse of technology for continual profit and unchecked energy consumption. Writing on estrangement, Vint argues that science fiction forces readers to reconsider the givenness of certain concepts because “The dialectical interaction between what is familiar and what is alien thus opens up a more critical understanding of the structures underlying and shaping the familiar world of daily experience” (*Science Fiction* 39). While all my focal texts employ estrangement to a certain extent, Bacigalupi’s and Atwood’s narratives make particularly potent use of it through the imagined potentials opened by genetic technologies and the greater body of knowledge on climate change.

The future in *The Windup Girl* disorients readers in its overturning of the taken-for-grantedness of nature that tends to be practiced, especially regarding food and animals. It opens

with an enlightenment-like moment of *jouissance* for Anderson as he consumes the *ngaw* (rambutan) that has been resurrected thanks to gene-hacking technology (2-3). The reader shares in the mystery of its unknown origins, yet at the same time, is likely to be experiencing a state of confusion regarding how the world ended up having to have crops like potatoes, tomatoes, and eggplants genetically resurrected after their extinction by lab-made horticultural blights (Bacigalupi 5). This level of estrangement disorients the reader so that they might be more attentive to the environment as something we are very much a part of. It also generates a space of discomfort that forces readers to consider what impact climate change and contemporary GMO agricultural practices will have on staple foods and the state of global biodiversity.

Discussing the effects of disorientation on bodies, Sarah Ahmed posits that “we learn that disorientation is unevenly distributed: some bodies more than others have their involvement in the world called into crisis. This shows us how the world itself is more ‘involved’ in some bodies than in others, as it takes such bodies as the contours of ordinary experience” (159). In this regard, Bacigalupi’s narrative is likely to be most disorienting to privileged bodies (particularly white, middle class, Western ones) that are used to free orientations without the restrictions of food insecurity, poverty, colonialism, or social unrest. While rambutans are perhaps not as common in Western grocery stores as potatoes, the idea that foods we regularly purchase and consume might no longer exist in the world is deeply unnerving. This sense of disorientation is heightened by the continued references to people starving and the depictions of inequality greatly affecting certain groups. Hock Seng, a Chinese Malaysian refugee who fled civil war in his homeland, finds it bewildering that Westerners like Anderson have “taken over the world once, let alone twice. That they succeeded in the Expansion and then—even after the energy collapse beat them back to their own shores—that they returned again, with their calorie companies and

their plagues and their patented grains . . .” (Bacigalupi 27). Hock Seng’s perspective is a potent example of Ahmed’s argument regarding the unequal experiences of disorientation. Even in instances of instability from climate change, the resources available to Western nations will be considerably higher than those of developing nations that have already been harmed by centuries of colonialist exploitation⁶⁷.

The Windup Girl further illustrates the difficulty in orienting ourselves in the Anthropocene through its underlining of the tension between globalized trade’s demand-driven food production and the increasing dependency on genetically modified products. The more focus on generating food for consumption and trade:

the more the planet and human bodies suffer from excess and depletion. . . . The more ‘we’ reflect upon ‘our’ mark on the planet, the more we appear to be a single polluting species, while also being more and more divided by the causes and consequences of what has come to be known as the Anthropocene. (Colebrook, “We Have Always” 4)

Colebrook observes a disconnect between our unity as a species and the ‘human subject’ in that we can no longer assume a givenness of the world as existing for humans, yet we have now caused damage to an extent that we are united as a species despite our unequal responsibilities for the harm that risks our extinction (7-8). Bacigalupi’s approach to the Anthropocene undermines any attempt to assume an equally distributed burden/responsibility for climate change while demonstrating the inequality between human and corporate needs through the Western corporate-driven coups aimed to destabilize other nations in order to gain access to their unpatented, fertile troves of seeds which they perceive as an untapped genetic goldmine.

⁶⁷ This is not to ignore the levels of inequality for achieving orientation within a Western nation during periods of instability. Those who are Indigenous, persons of colour, women, and impoverished are all highly vulnerable to the effects of climate instability.

References to bloody coups and invasions in Burma and Finland by Anderson and Carlyle indicate their intention to do the same to the Thai, if necessary, to gain access to their seedbank, thus gaining totalizing control over their markets (206). In *The Windup Girl*, not even being united globally by climate change, species loss, pandemics, and a food crisis is enough to stop Western attempts to profit at the expense of other nations' food security.

Early in the novel, Anderson recalls an argument with his predecessor Yates where he expresses gaining access to the Thai seedbank would save lives because the seed corporation's products are increasingly failing to stand up against the freely mutating diseases, resulting in ongoing food crises. Yates points out Anderson's hypocrisy, remarking that "The company goes in somewhere and we all stand back and wash our hands. Pretend like we weren't the ones responsible. . . . But people starve just the same" (Bacigalupi 6). The intentional destabilization of governments by denying a staple food suggests an additional level of resource anxiety regarding the climate crisis. The future food crisis highlights the deep division between Western responsibility for the global state of crisis and other nations, despite the world-wide urgency.

Tom Idema's in-depth reading of the use of water-related imagery in *The Windup Girl* connects Anderson's last name of "Lake" and story with "the flows of capital, labour, life, and water. . ." (57). Idema also suggests that "Anderson's misplaced optimism" should draw readers' attention to the still-existing possibilities in their world (57). In other words, we are not there, yet. One such example of this reminder is when Anderson is looking at an old photo of Expansion gene-hackers from before the crisis and readers are told: "He can usually ignore the foolish confidence of the past—the waste, the arrogance, the absurd wealth—but this one irritates him: the fat flesh hanging off the *farang*" (64)⁶⁸. Anderson's anger is ironic considering

⁶⁸ *Farang* is the Thai word for Westerner.

he seeks a return to the Expansion times—the reader’s present time of waste and excess—and works to expand the power of a company that contributes to the perpetuation of the food crisis in its engineering of infertile crops.

The reference to the narrative’s past to connect to our present also offers an example of Jameson’s frequently cited argument regarding the power of science fiction’s temporal structure to “not to give us ‘images’ of the future-whatever such images might mean for a reader who will necessarily predecease their ‘materialization’—but rather to defamiliarize and restructure our experience of our own present, and to do so in specific ways distinct from all other forms of defamiliarization” (“Progress Versus Utopia” 151). The prior passage from *The Windup Girl* defamiliarizes readers by having Anderson hesitate in identifying the fruits in the photo, emphasizing the strangeness and alienness to him of these extinct things from the past that to readers are a mundane part of our reality: “there are no oranges, now. None of these . . . these . . . dragon fruits, none of these pomelos, none of these yellow things . . . lemons. None of them. So many of these things are simply gone” (Bacigalupi 64). Doing so forces readers to consider the fragility of life under climate change, genetic modification, and even subtle changes in the environment. Extinction presses a consideration of our endings (Schuster, “Life after Extinction” 106). Bacigalupi’s repeated emphasis of “none” in the above passage adds further weight to the extinction of seemingly stable objects in our reality, heightening the level of estrangement and inviting the reader to critically imagine how much will be lost due to climate change, as well as the potential of their own extinction. This urges consideration of the complex interrelations of both human actions and the environment, the remaining possibilities, and the cascading instabilities and inequalities that will result if no action is taken.

Dipesh Chakrabarty observes that current writing on the climate change crisis shows a shift in that "In unwittingly destroying the artificial but time-honored distinction between natural and human histories, climate scientists posit that the human being has become something much larger than the simple biological agent that he or she always has been. Humans now wield a geological force" (206). While this chapter has examined the agentic power of nonhuman entities and ecological forces to impact human life, it is also necessary to recognize that this in no way means that humanity is to be removed from their responsibility for triggering many of those forces through their embedded actions. Chakrabarty argues that in transforming humans into geological agents, the long-standing natural histories of western culture that separated the human from nature end up collapsing in the Anthropocene (207). Ironically, in becoming a geological force, the human is once again returned to nature. Morton argues the concept of Nature acts as a barrier to recognizing how life is interconnected and that giving it up is necessary to take responsibility for climate change (*The Ecological Thought* 99). If we are enmeshed, we cannot separate our actions from nature; we are one species in an intersecting nexus and are, through our actions, damaging others and ourselves by assuming our social and technological assemblages can manage and control this thing that flows through and beyond us. The premise of separation fails because nature, as we conceive it, is not an object and does not exist solely outside of us.

One example of the tension between anthropocentrism and recognizing nonhuman agency and the need for enmeshment in *The Windup Girl* lies in the plagues that threaten the survival of human and nonhuman life on the planet. Bacigalupi's narrative achieves this in two ways. Firstly, it highlights the liveliness of the blights in contrast to the manufactured capitalist nature, and secondly, it undermines the anthropocentric faith in human technological systems as a means of mastering the environment. The plagues become a major space of uncertainty where

one cannot predict how they will mutate or even be certain that the government-certified food they are eating is safe (Bacigalupi 3). Iovino and Opperman observe that the world (including inanimate matter and nonhuman lifeforms) “has always been considered passive, inert, unable to convey any independent expression of meaning” (2). They further contend that this mentality has reinforced the assumption that even when humans harm ecologies, they can simply solve the problem by applying technology to it (3). Gibbons espouses this idea multiple times, arguing “I built the tools of life. If people use them for their own ends, then that is their karma, not mine” (Bacigalupi 245). The problem is that those tools are unable to properly anticipate or control the becomings of that life—or what other lives they might affect. Blister rust and cibiscosis constantly mutate, resulting in a persistent need to manage outbreaks and reengineer crops.

Anderson’s death is the result of an unforeseen mutation catalyzed in his kink-spring factory (341). Applying cyborg politics and biopower to the text, Tavera contends that Anderson is “Haraway’s cyborg, dependent upon seedbank-produced *ngaws* and calorie company business for survival, but also at the mercy of corporate production, including its unintended spawn, genhacked diseases. Each of these cyborgian subjects...[is] enmeshed in a posthuman ecological system, one that is also economically driven” (33). Examining the infection in her lab, Ratana notices that the changes in its DNA that allow it to jump from plant to animal hosts would not likely occur in the wild (217). The disease is a cyborgian mixing of organic biological products, tropical temperatures, and manufactured chemical cultures that facilitated the mutation (249). Barad argues that the nature of iterative reconfigurings reveals how necessary an “ethics of responsibility and accountability” is for not only knowledge acquisition and our actions but also the material world (Meeting the universe 242-3). While the disease is no act of biowarfare, it and

the continued mutations of the other lab-created diseases offer examples of the need for such accountability regarding biotechnologies and their potential consequences.

The Windup Girl consistently depicts the dystopian ecological potentials of continuing with an illusion of disembeddedness from nature. Discussing Gibbons's assertion that nature truly belongs to us (Bacigalupi 243), Otto suggests that the "collective goal" of eco-fiction and ecocriticism is to "contribute to a host of cultural and critical efforts that aim to prevent the total realization of what Gibbons observes" (123). By connecting food scarcity to political and climate instability, Bacigalupi effectively shows the entanglements of humans and human systems in the biosphere, resulting in the inability to fully control it through technology. The seedbank in *The Windup Girl* is a potent example; it gives the Thai government significant power to potentially reengineer lost biodiversity or immune crops, but it can neither restore the biomes that were lost nor can it stop the existence of the diseases and invasive gene-hacked life were unleashed into the environment. This is especially true as the systems are further destabilized by the effects of climate change. Feedback loops, tipping points, and cascading effects of climate change have resulted in "the problem of an unpredictable and potentially uncontrollable autonomous nature" in response to anthropogenic global warming (Merchant 149-50). The nature of the biosphere is an assemblage, making the full effects of climate change impossible to fully manage.

Through Gibbons's perspective, Bacigalupi depicts the common problematic assumption that technology can solve the complex problems affecting a passive and inert environment. The text leaves the possibility that the genetic arms race of constant gene-hacking may in part be driving the mutations occurring by pushing their evolution and giving them ever-new sources of potential life. Life's ability to adapt can be as destructive as it is vital. Gibbons's own body acts as a powerful subversion to his totalizing ideology. Despite all his claims of human mastery of

life and knowledge, the best technoscience can do for him is limit the spread of the disease that is colonizing his body and has already left him with paralyzed legs covered in sores (Bacigalupi 242). Both Lai's and Bacigalupi's depictions of the interactions diseases have with nature and bodies—and their significant power to shape ecologies—actively undermine the image of a passive state to the material environment. This is especially true for the ecosystem in *The Windup Girl* where its non-human agents are constant driving forces behind ongoing technological research, which, in turn, trigger environmental responses.

5.3.1 Rethinking Niche in a Post-Nature World

Much of *The Windup Girl* is concerned with “niche,” a concept firmly connected with ecological perspectives related to natural/unnatural and local/invasive ecologies. Bacigalupi's narrative suggests niche needs to be rethought in order to resituate humans within nature. The way the Thai perceive the genetically created creatures is akin to Western perceptions of GMO foods as unnatural. *The Windup Girl* approaches the small-scale aspects of genetic modification in a way that is distinct from the aesthetics of disgust that characterize many fictions addressing the topic (Selisker 502). This is a feature that it shares with my other focal texts in their positioning of genetic modification as being merely another form of becoming—this does not mean though that such becomings lack the potential to severely harm or impact other species and established systems. *The Windup Girl* invites readers to consider the long-term impacts of genetically modified life (Selisker 514). At the level of DNA, it is impossible to tell the difference between the original sequences and those which have been inserted virally—life itself can be regressed into nonliving matter such as molecules (Morton, *The Mesh* 67). These blurred distinctions complicate the traditional binaries between life and non-life, original and artificial, and human and nonhuman; many of the boundaries separating them—such as those between

living and non-living forms—simply do not exist (22). Bacigalupi’s uses of genetics similarly contest categories of natural and unnatural through his cheshires, New People, mutating diseases, and genetically resurrected crops, underscoring the strangeness of life that grants it so much fluidity and flexibility through its enmeshment with other living and non-living matter.

Challenging the separation of products of technology—and by extension, humans—from nature is an important element in *The Windup Girl*. Bacigalupi’s deconstruction of the category of ‘natural’ through the established tension between Emiko being both a representation of high technology and heavily embedded in her environment makes it impossible to deny her personhood or her ability to adapt and find her niche. In many ways, Emiko is a person without a niche until the very end of the novel. While Gibbons considers New People like Emiko to be higher beings because of their genetically programmed adaptations to resist disease, Emiko is too often “categorized as a ‘genetically transgressive’ invasive species and subject to immediate ‘mulching’ if she is captured by the Thai environmental ministry” (McQuiston 202).

McQuiston’s analysis of Emiko draws attention to the varied and contradictory categories she is placed in ranging from a wondrous object in Japan, to an illegal transgression against nature/niche, and a soulless affront to nature for religious groups such as the Grahamites, Muslims, and Buddhists (202-3). Emiko appears to lack a niche until the end of the text but only because the laws and attitudes of those around her will not grant her the right to exist. Her situation finally changes after Kanya floods and evacuates Bangkok to save the seedbank and prevent Caryle’s coup. In the now abandoned and flooded city, Emiko “lives by scavenge and the hunt. . . . She eats well and sleeps easily, and with water all around, she does not so greatly fear the heat that burns within her. If it is not the place for New People that she once imagined, it is still *a niche*” (Bacigalupi 356, emphasis mine). Emiko is finally in a position to orient herself

towards a sense of belonging and has discovered one niche; the fact it is “a niche” and not “the niche” implies there are others she could fill, undermining the idea that in being created rather than born, Emiko is somehow outside of nature and niche and that niches are static. In using “a niche,” Bacigalupi also emphasizes the fact that there is not just one for each lifeform, further conveying the idea of ecosystems as dynamic assemblages.

The concept of niche permeates *The Windup Girl* and queries how the world might adapt to future environmental damage. Bacigalupi uses the ecological crisis to challenge readers to reconceptualize their assumptions regarding the natural world and to orient them towards an understanding of the harm caused by the traditional concept of Nature (Hageman 293). As Latour suggests, “All historians acknowledge that humans have adjusted their environment to suit their needs: the nature in which they live is artificial through and through” (*Facing Gaia* 98). Discussing approaches to nature that aim to return it to a concept of pristine wilderness before humans—a form of nature which has not existed for some time—Emma Marris notes the only way to achieve such a thing is, paradoxically, to have a heavily-managed ecosystem (12). Creating such natural ‘purity’ also often requires acts of violence. Marris highlights attempts to manage invasive wildlife in Australia where conservationists attempt to trap and kill the excluded species, ignoring the poorly understood environmental impacts of their actions (11). For Marris, these actions reveal that “Ultimately the enemy is not exotics; the enemy is us” (98). Belyea and Norris echo this opinion, suggesting that humanity has “become, in relatively short order, the planet’s most treacherous virus” (8). While such claims problematically reduce all humanity to an equally destructive force, Marris’s recognition of the violence needed to enforce biome purity is useful for examining *The Windup Girl*. The adaptive cheshires and Emiko’s

finding of a niche both challenge readers to consider weird ecologies through a rethinking of niche and how to preserve biodiversity without treating nature as if it were static/

Bacigalupi's challenge to the biopolitical management of nature and the vital need to critically examine it as a hegemonic norm is further demonstrated by his approach to invasion ecologies. Problematizing the concept of weeds and the claims of some ecologists, Garrard contends that "To describe something as an ecological problem is to make a normative claim about how we would wish things to be . . ." (Garrard 6). Emiko's superior reflexes and speed do not make her a killer, the circumstances she is forced into by humans do (Bacigalupi 259). Similarly, Emiko's and the cheshires' adaptive abilities are not inherently pernicious. The cheshire is simply a cat that has been modified, granting it amazing hunting and hiding abilities. Unfortunately, that means that in certain environments, "suddenly entire classes of animals are wiped out, unequipped to fight an invisible threat" (Bacigalupi 114). The cheshires have quickly changed the ecosystem but the question remains of whether killing them is the best strategy of management now that they are established. Discussing invasion politics and killing invasive species, Frawley and McCalman argue that "we may need to think more flexibly about the cultural values entailed in supposed ecological invasions" (8). Both Watts's and Bacigalupi's texts imply attempts at containment often result in further harm. As climate change facilitates more invasive ecological shifts, the necessity of ensuring that a healthy ecosystem exists may mean selecting species with the strongest chances of survival under future conditions or—like the cheshires—those that are most adaptable. Such an approach requires we resist falling into Gibbons's transhumanist position that one species (engineered or not) is somehow inherently superior to another. While Watts, Lai, and Atwood certainly offer critical examinations of

‘natural’ and invasive species, Bacigalupi undermines notions of species superiority and the privileging of “natural” through *The Windup Girl*’s invasion narratives.

Understanding the cheshires’ destructive nature also offers an instructive critique of humanity. As Morton notes in his discussion of climate change, humans have caused it with “the aid of beings that they treated as prosthesis: nonhumans such as engines, factories, cows, and computers” (Dark Ecology 20-21). The cheshires’ engineered adaptability suggests that humans (especially Westerners) are by extension also an invasive ecology, one that is no less ‘natural,’ but full of prosthetic relationships that have enabled us to cause catastrophic harm. The flooding of Bangkok at the end of *The Windup Girl* has multiple meanings, including the failure of containment to keep globalized trade and climate change at bay. Much like the flood in *The MaddAddam Trilogy*, new possibilities are opened for the mix of born and made creatures that remain. Idema suggests the flood ending may “offer a fresh start to a newly adapted humanity” (60). Discussing the significance of Emiko, Gibbons, and his transsexual lover Kip being the ones remaining in the flooded holy city (Bacigalupi 357-8), Hageman observes that they “are a heterogeneous group that disrupt any conventional sense of ‘human’ purity. . . . Their heterogeneity stands for a survival of diversity, of the queer” (300). While Hageman and Idema focus on the humanoid subjects of the text, I believe it important to note that the cheshires also thrive in the abandoned city and that they too are then included among those deemed worthy to repopulate it, suggesting that they, too, have a valid niche in this posthuman future.

While *Salt Fish Girl* ends with a hopeful birth that is queer, posthuman, and non-white, *The Windup Girl*’s ending attaches both destructive and ‘fertile’ future possibilities to a similarly queer and posthuman group of creatures left to inhabit the niches created in the Anthropocene. Trexler extrapolates from the inability of Bacigalupi’s characters to have a complete

understanding of the whole global situation to suggest there is no complete perspective of understanding in the Anthropocene (*Anthropocene Fictions* 215). Through that uncertainty, Bacigalupi invites us to consider a possibility akin to Marris's proposal that "The despised invaders of today may well be the keystone species of the future's ecosystems, if we give them the space to adapt and don't rush in and tear them out" (109). The ending of *The Windup Girl* asks readers "to extrapolate along the line of the gene and to imagine the extreme long-term effects of each new species created or changed through genetic modification....the bit of hair that Gibbons will take promises to transform the biological makeup of the planet as a whole" (Selisker 514). Bacigalupi leaves readers to contemplate a 'post-nature' future that still demands care and accountability for human impact. *The Windup Girl* thus encourages readers to undergo a reorientation towards a critical reconceptualization of their relationships to nature and technology through its estranging landscape and by both resting the exclusion of technologically mediated lifeforms from nature and rejecting technology as offering guaranteed salvation.

5.4 Ecology Without Humans: Atwood's Orientation Toward a Situated Existence

Like my other focal narratives, *Oryx and Crake* opens with early chapters frequently indicating that the effects of climate change are well underway during Jimmy's lifetime. Much like *The Windup Girl*, *Oryx and Crake* employs defamiliarization to sufficiently disorient readers so that they must critically make connections in deciphering what happened; however, Atwood adds a layer of satirical humour. Unlike Shelley's dignified and elegiac figure in *The Last Man*, readers are introduced to Jimmy (Atwood's 'last man') climbing down from a tree in a filthy bedsheet, covered in insect bites. and picking through a poorly maintained stash of food (5-6). While the cause of the disaster is not revealed, Jimmy's fragmented musings offer a hint. Quotes

from a European colonialist missive for plantations imply that his circumstances are connected to the treatment of North America by its colonizers as a fruitful land for the taking (7).

The compound society depicted in *The MaddAddam Trilogy* extrapolates on the current political and corporate treatment of the planet to create its speculative narrative of eco-disaster. Regarding our treatment of the planet and a problematic belief held by those in power, Moore suggests “An extreme anthropocentrism lies at root in our mistreatment of the earth in the assumption, largely unexamined, that it exists for us to exploit . . .” (28). Like the seed companies in *The Windup Girl*, corporations in Atwood’s pre-plague world engage in biological warfare to the detriment of both animal and human lives. Jimmy’s earliest memory is of pigs being destroyed at a massive bonfire because they were intentionally infected with a bioform (*Oryx and Crake* 23-4). Compound life encourages consumer behaviour; even as “time went on and the coastal aquifers turned salty and the northern permafrost melted and the vast tundra bubbled with methane . . . and meat became harder to come by . . .” (29), restaurants like Rarity illegally serve endangered animals to wealthy customers (*Year of the Flood* 31).

Atwood’s narrative portrays the difficulty that humans have in accepting and connecting to the instabilities surrounding them particularly well. It also underlines the necessity to rethink systems we find familiar and safe that may be unsustainable. The problem does not necessarily lie in human nature, “We weren't born having to shop this much, and we have, in our recent past, been just as happy (in many cases happier) consuming far less. The problem is the inflated role that consumption has come to play in our particular era” (Klein). As the reader is denied an initial understanding of what has led to the societal collapse at the beginning of *Oryx and Crake*, the references to ongoing climate changes invite critical consideration of whether it was the primary cause, increasing the odds that readers will experience a heightened recognition of the

socially constructed consumer habits depicted as crude parodies of our current behaviour. By doing so, Atwood models how the attitudes of consumer culture that perpetuate treating the environment as a monetized resource for human exploitation are learned.

Beyond the basic separation from nature to encourage consumption, Atwood is very detailed in her portrayal of how corporate green initiatives target cultures of individualism to avoid taking responsibility by off-loading it onto individual habits. In Atwood's future, spas like AnooYoo encourage feel-good 'green' consumption through marketing botanic products and an organic garden restaurant (*Year of the Flood* 263). Alaimo contends that while there are global social justice initiatives taking place, there is also a growing trend in "corporate greening'...through individual actions [which] often result in the consumption of more products and more energy while also reducing green living to just another consumer choice, as individuals are made responsible for threats they cannot possibly subdue'" (*Bodily Natures* 92). Zeb's operation Bearlift is a notable example; it is permitted by the authorities because it offers hopeful feelings and a distraction from the real environmental devastation being done (*MaddAddam* 59). Bouson contends that the operation Bearlift scam is an example of how Atwood actively critiques the "shallow environmentalism" movement of those who express environmental concern but do not demand radical social change ("Joke-filled romp" 346). These instances also offer a critique of how individuals seek relief from climate anxiety through these shallower acts.

The separation of people from the environment is further illustrated by the social structure of the corporate compounds which exclude the poorer majority of the population into the Pleeblands where they experience increasing corporate exploitation and environmental and social instabilities. Even inside the compounds, Crake and Jimmy's lives are "embedded in a systematic acceptance of separation and enclosure from communities and people not engaging in

similar work” (DiMarco 177). Isolation from the community and environment leads to only a fragmentary understanding of the world, preventing them from fully understanding the implications of what it means to be an active and enmeshed part of the world.

Atwood’s critique of the seclusion and individualism encouraged by the compounds is presented with added complexity through her exploration of sustainability in the face of climate change. Regarding collapse and sustainability, Dana Phillips notes that environmental historians define collapse as a drastic depletion of resources, governmental collapse, and a gross reduction of ecological and social complexity (140). This definition matches many of the instabilities driving Atwood’s narrative and connects to the extreme positions taken by Crake as well as the MaddAddamite eco-terrorists who engineered such things as a microbe that destroyed asphalt and a Chickenpox virus that targets the ChickieNobs (*Oryx and Crake* 261-2). While collapse is often portrayed as an extremely grave situation, it is one some believe can be mitigated by the utopian possibilities of ecological stability (Phillips 140). However, stability is a fuzzy concept at best and is often problematized by its tendency to be defined in purely humanistic terms, resulting in a situation where we want to both preserve ecosystems while globally continuing along our patterns of socioeconomic growth (Bergthaller 730). Crake seems to come to the conclusion humanity will never sacrifice the latter to achieve the restoration of the former. Several critical looks at the *MaddAddam* trilogy “suggest that the model of humanity Atwood’s series develops is essentially destructive” (Morgan 25). The hybrid posthuman future envisioned by Atwood undermines this assertion, however, by subverting the naturality of so-called ‘nature’ at its core. Bergthaller suggests that Atwood reveals the paradoxical unnatural actions of sustainability while imparting the uncomfortable awareness that the ecological destruction we are generating is all too natural in terms of our species’ behaviour. Atwood also critiques the

Romantic critical notion of a “stable and knowable natural order within which human beings have their proper place” (731). As the trilogy progresses, the numerous scenes of wildlife and insects suggest that the ecological system begins to repair itself, but that it does so without human intervention and through both the old and new species. Rather than a return to an idealized imagined past, the ecosystem begins to bounce back with hybrid resiliency, undermining any desire of going back to a human-cultivated image of ‘pure nature’.

5.4.1 Climate Estrangement and Eco-Reorientations

Much like *Salt Fish Girl*, one of the estranging features in Atwood’s narrative is the normalization of climate change and how little characters react to it. Garrad notes that apocalypticism and its foreclosure in environmental fiction are generally not productive in getting people to connect events to climate change because it “fosters a delusive search for culprits and causes that may be reductively conceived by conflating very varied environmental problems within the concept of a singular, imminent ‘environmental crisis’” (115). Atwood’s pre-plague world is certainly well on its way to the cataclysmic forms of extreme climate change that scientists have warned will occur unless there are significant reductions made to carbon emissions. However, Atwood undermines the notion of a total apocalyptic event, encouraging the reader to focus on the underlying causes by presenting a non-totalizing slippage into climate crisis. It is a human-created plague, not climate change which brings about human extinction. While Crake’s plague may well be the end to humanity (as we define it), it is hardly apocalyptic for the planet. Atwood’s apocalypse is only an ending if the only life you value is human life.

In fact, climate change is hardly seen as a threat by most of the characters in the text. Instead, it is, the ‘normal reality’ of most of Atwood’s characters because they have lived with its increasing effects all their lives. Despite her attempts, Jimmy’s mother fails to impart

environmental awareness in him (Phillips 148-9). Like Aimee's normalization of global warming in *Salt Fish Girl*, Jimmy's casual listing of the ongoing melting of permafrost, rising sea levels, and desertification of the planet (*Oryx and Crake* 29) show the adaptation to and normalization of climate change as it occurs. Even the more ecologically minded Toby reflects on the difficulty in conceptually understanding climate change, remembering how even when she was aware of things going wrong, "the wrong things were wrong somewhere else" (*Year of the Flood* 238). She recalls that when she was in college "the wrongness had moved closer. She remembers the oppressive sensation. . . . Everybody knew. Nobody admitted to knowing. If other people began to discuss it, you tuned them out, because what they were saying was both so obvious and so unthinkable" (238). Jimmy exemplifies this exact point when he tunes out much of his mother's message for him in the note he receives: "*blah blah, no longer participate in a lifestyle that is not only meaningless in itself but blah blah. She knew that when Jimmy was old enough to consider the implications of blah blah, he would agree with her*" (*Oryx and Crake* 72). The "*implications of blah blah*" is most likely climate change and, while Jimmy can recall the drastic changes in seasons in comparison to his childhood (Moore 233), he does not want to think about it.

Toby's and Jimmy's reactions to climate change reveal how humans often seek elements of normalcy during periods of instability and crisis, such as when struggling with something as vast and abstract as a hyperobject. Morton explains that large concepts such as global warming get closer when they "become thinkable" but that "They are so massively distributed we can't directly grasp them empirically. We vaguely sense them out of the corner of our eye. . . . These 'hyperobjects' remind us that *the local is in fact uncanny*" (*Dark Ecology* 11). Toby's growing sense of wrongness suggests a form of climate anxiety, that uncanny sense we experience when confronted with the looming closeness of climate change. All my focal narratives trace growing

unpredictability and instability in connection with climate change in ways that challenge anthropocentric control over the environment by highlighting the autonomous system of the biosphere, but Atwood's narrative is particularly direct in making it an elusive but oppressive presence in the minds and lives of her characters.

The God's Gardeners offer a different reaction to rising instability from Anthropogenic climate change, choosing to embrace it through the fanatical form of an ecologically oriented doomsday cult. Atwood's satire challenges readers to form a more critical interpretation of the text. Both the corporate scientists and environmental activists are lampooned and equally hard to stomach, resulting in an uncomfortable read (Phillips 147). However, that discomfort serves the helpful role of estranging the reader from both extreme positions, allowing through that destabilization for them to be reoriented towards a critical 'middle' path. As representatives of the extremes of "techno-ecological utopians and deep ecologists," both Crake and Adam One are targeted in her satirical critique (Traub 95). Morgan puts forth Toby's journey of self-reflection as the guide for readers to navigate "the complexities and contradictions of an ecological imaginary in flux" (30), a suggestion that further supports my arguments that *The MaddAddam Trilogy* creates a space to orient the reader towards a politics of embeddedness and care.

Atwood draws on the idea that to make environmentalism work, it must become like a religion (Bouson "We're Using Up" 18). However, even with a humorous depiction of the Gardener faith, critical questions for readers are interspersed throughout Adam One's Sermons and the Gardener poems. In one such sermon, Adam One not only preaches Darwinian reminders of our being primates, thus returning the human to its inter-relations as an animal, he also critiques our "sacred task of stewardship" and our belief that "everything on Earth belongs to us, while in reality we belong to Everything" (*Year of the Flood* 51-2). In doing so, he preaches a

materialist ecopolitics of entanglement. Adam One's position regarding the role of the Gardeners to bear witness to the flood straddles an uncomfortable passivity (253). Unlike the MaddAddamites, the Gardener efforts are not likely to save any species. On the other hand, his situating humans within the flood demonstrates a refusal to elevate them as special or worth saving at the cost of other species. Everett Hamner makes the compelling argument that Adam One is actually the shrewd puppet master that has over time radicalized Crake into unleashing the plague and ensured he acquired the microbes to do so (161-3). As a foil and mirror image to Crake, Adam One once again demonstrates the inseparability of nature from culture and religion from science in both his sermons and his subtler manipulations to save the planet.

According to Bergthaller, Adam One's teachings are meant to impart "a reconciliation of the nature of human beings as evolved biological creatures . . . with their need for an imaginary order that transcends and, as it were, extenuates these biological givens" (739). Bergthaller locates the ecological crisis in a "failure of imagination," arguing that the Gardeners' religion and Atwood's novels aim to orient readers towards both a recognition of the limits of Crake's reductive and horrifying plan and the need to contemplate the limits of 'human nature' (741). Much like how Taka imagines the possibility of Seppuku's genetic hitchhikers recoding the human to be a kinder, better, and less destructive form, Crake's plan must critically be considered in terms of his idea that humanity may have to recode both our concept of human and how we think if we are to truly achieve a sustainable ecological politics. To fully embrace a posthumanist politics under climate change, we must confront the hard questions, including, as posed by Bergthaller, "why (and under what conditions) the survival of the human species should be regarded as an ethical good to begin with?" (742). The question is a disturbing one, but one both Atwood and Watts present as necessary to consider, especially when so a general

unwillingness to place limits on individual human choices often stalls proposed climate interventions. many proposed climate change solutions are rejected because of a general unwillingness to place limits on individual human choices.

5.4.2 *An Embedded Posthuman Garden*

Despite Crake's endeavour to save the planet through his plague and the Crakers, he represents the dangers of human disembeddedness from the environment. While Crake does not make the specific distinctions between natural and artificial that Jimmy does, he reduces nature to an object of science that can be isolated and 'perfected'. Haraway describes how the totalizing gaze of objective science limits knowledge through isolating and fetishizing its subjects ("Situated Knowledges" 193), offering an imperfect perspective. For Haraway, knowledge must be "partial, locatable, critical knowledges" (191). As with the more recent new materialists like Barad and Alaimo, Haraway's feminist objectivity of situated knowledges requires one to recognize "the agency of the world" and make space "for some unsettling possibilities" (199). Atwood models a similar feminist ecopolitics, showing the dangers of a totalizing perspective by resisting Crake's objectifying attempt to use science to thoroughly control the Crakers' design.

In the moments after Jimmy witnesses Craker women performing a ritual for Oryx, he recalls that "Crake thought he'd done away with all that, eliminated what he called the G-spot in the brain. God is a cluster of neurons, he'd maintained" (*Oryx and Crake* 192). Atwood's tongue-in-cheek humour is evident here in how Crake's inability to eliminate reverence from the Craker brain (his own attempt at 'playing god') reveals the limits to his omniscience and power. While his experiment has unintended outcomes, the adaptation and development of the Crakers through their interactions with Jimmy and the other survivors—especially through Blackbeard's interactions with Toby—further destabilizes any hope for an anthropocentric mastery of nature.

It also emphasizes the embeddedness of all phenomena. Blackbeard becomes much more than Crake ever anticipated through his multiple interactions with others, eventually taking over the role of storyteller and historian, recording their lives, and acting as a mediator for the humans and the pigoons (*MaddAddam* 385). Similarly, Jimmy observes that the pigoons appear to be growing tusks despite being supposed to be tusk-free, demonstrating the adaptability of nature through its situated becomings.

In Lucy Rowland's exploration of the hybridization and the recurring presence of artificiality in the environment in *MaddAddam*, she observes that Atwood appears to have incorporated some of Morton's post-natural ontologies, combining it with ecofeminist rejections of nature/culture binaries (54). Morton argues that "ecological collectives must be open, not closed totalities" (*The Ecological Thought* 127), where the long-term issues of consideration are those of how one might care for "the neighbor, the strange stranger, and the hyperobject" (135). In Atwood's post-flood environment, the survivors must embrace the "strange stranger" and make partnerships with the nonhuman environment in order to survive. The presence of genetically modified animals thriving in the post-flood world invites readers to question concepts of 'natural' (Rowland 53). Atwood's ending can be read as an imagined form of community that aims to facilitate an understanding of interconnection that includes encounters with entangled others and resists figuring nature and its nonhuman inhabitants as passive or separate from us.

The communal funeral for the slain pigoon, Jimmy, and Adam One is a significant moment demonstrating community and a sharing of space and nature as part of an entangled sequence. Jimmy and Adam One are returned to the earth through a composting with trees selected to be planted over them that offer benefits for both human and animal communities. While the pigoons did not bury the corpse of their dead one, they left her in a clearing strewn

with flowers, perhaps to allow the other forest creatures to also find sustenance (Atwood, *MaddAddam* 374). Rowland argues that reading Atwood through an ecofeminist understanding of adaptation and species vibrancy suggests "the possibility of an ecofeminist heterarchy among the survivors" (62). Garrard observes that there is a tendency among more radical forms of ecofeminist fiction to essentialize women as closer to nature and even reject traditional forms of science (27-29), something Atwood avoids through her hybrid post-plague future that brings together gene-spliced and 'natural' species. Reading Atwood through a materialist feminist lens enables one to understand how she attempts to destabilize the nature/culture boundary to present a hopeful future and ecologically minded politics without falling into those reductive tropes.

As with all my texts and their eco-posthuman politics, the themes of awareness and interconnection, and the moral questions they pose in Atwood's trilogy are not easily negotiated. Morton eloquently meditates on this problem in *Dark Ecology* writing:

When thinking becomes ecological, the beings it encounters cannot be established in advance as living or nonliving, sentient or nonsentient ... Eating a fish means eating mercury and depleting a fragile ecosystem. Not eating a fish means eating vegetables, which may have relied on pesticides . . . Because of interconnectedness, it always feels as if there is a piece missing. . . . We can't get compassion exactly right. (126)

God's Gardeners grapple with something akin to Morton's expression of the challenges of negotiating the world from an ecologically aware perspective. Tasks like relocating slugs and pulling weeds in the garden (Atwood, *Year of the Flood* 16) is still depriving those slugs of a meal and deciding what plant life is deserving of that space over others. Toby and her predecessor's medicines may be natural, but they prioritize the patient over the infection. Morgan notes that Toby's struggle with her empowerment to "take life as well as nurture it," can

be read as “a poignant inquiry into the nature of humanity” (38). The previously discussed sentiment expressed by Vint that a part of living involves killing (*Animal Alterity* 80) is akin to what Toby acutely feels in her efforts to negotiate eco-consciousness and survival in the turmoil after Crake’s plague.

This is especially felt by those survivors during the trial for the Painballers. Some feel enough blood has been shed, while others feel they must be killed for their crimes and so they do not cause further harm (Atwood, *MaddAddam* 368-9). It is impossible to save or care about all lifeforms at once, a fact that leads Morton to argue that animal rights fail because the normativity of rights language means “some beings can have rights to the extent that others do not” (*Dark Ecology* 151). The trial that the humans, Crakers, and pigeons hold for the Painballers illustrates the difficulty in conceptualizing systems of an ecopolitics centred on interdependency and multispecies coexistence because for them to protect the humans and nonhumans within the community, they decide that they must kill the Painballers (Atwood, *MaddAddam* 369-70). The trial demonstrates the difficulty in negotiating systems of interdependence, multispecies coexistence, and respect. However, it does not mean that one should reject attempting to incorporate this awareness seriously in their negotiations with the world. Quite the opposite; Atwood’s community and its difficult questions which Toby and the other survivors must grapple with apply to everyone in deciding where to establish those boundaries; doing so is essential for an environmentally situated community and negotiating how one lives with others.

Atwood's environment at the end of *MaddAddam* reflects a vibrant and embedded politics that resists anthropocentrism through those that remain after the waterless flood. Marris argues rather than romanticizing “wilderness” as nature without humans is culturally constructed (15), and that embracing a “rambunctious garden” approach means we take on the difficult task of

learning to “marvel at all the diversity of life and fight its disappearance, even if that diversity occurs in unfamiliar places” (3)⁶⁹. Atwood's post-flood "garden" offers one such attempt at imagining a reinscribed nature in that there is no return to a romanticized and past ideal of purity, but there is a new array of diversity that has started to establish entanglements through the recently introduced genetically spliced species, allowing it to create new niches, fill gaps, and hopefully achieve a different healthy state.

This posthuman garden, much like the one at the end of *The Windup Girl* is not a return to an idealized untouched "Nature"; instead, it shows a diverse community of Crakers, humans, and pigoons (*MaddAddam* 374). They share the world with a thriving host of genetically modified rakunks, wolvogs, liobams, and bobkittens, as well as the many insects Jimmy encounters in *Oryx and Crake*. Unlike Lai's and Bacigalupi's novels, the figures of oppressive corporate technoscience are among the dead, instead of alive to loom over the future. Atwood's narrative still ends with an uncertain fate for humanity, but it also offers an image of renewal of the ecosystem through new becomings that do not distinguish between born and made. As Lee Rozelle observes regarding *Oryx and Crake*, Atwood creates a mix of “dread” and “possibility” in the uncontrolled mingling of ‘invasive’ and ‘natural’ species which may open an unexpected potential for life to survive in the world after humanity (65). Atwood builds a sense of awareness of this growing diversity through her entire trilogy with scenes teeming with nonhuman flora and fauna. Atwood's survivors face the future's uncertainty with a politics of responsibility and a diverse community of (mostly nonhuman) agents. In doing so, the narrative offers its own version of a hopeful future, one which may aid in reorienting readers away from anthropocentrism towards a more ecologically enmeshed posthuman ontology.

⁶⁹ Marris uses the term “rambunctious gardening” to describe a radical process towards ecological systems that is “proactive and optimistic” in its creation of nature (3).

5.5 Conclusions:

We understand the world through our entangled becomings with other bodies, natures, and agencies; through them, the world is alive and is “read” by its rhizomatic mesh of transformations and, in turn, interpreted into stories” (Iovino and Oppermann 1). In this final chapter, I have traced out how these ecofiction texts approach the environment along the line of a posthuman politics. While their narratives feature climate change and environmental pollution to varying degrees, all of them depict them through techniques of destabilization and estrangement. Doing so creates a critical space for the reader to rethink norms such as anthropocentrism and nature/culture dualisms. Most of my focal texts are also in some way apocalyptic (Lai’s being the exception). As forms of eco-fiction, their apocalyptic structure offers a means of approaching the text with greater openness than one might encounter through non-fiction as readers are “more able to accept the setting of the text as a possible reality rather than as the real world because....the apocalyptic scenario that appears in the fictional world does not pose a threat to the reader’s sense of reality” (Hambrick 135). Such cognitive separation “allows readers to begin to consider and engage environmental issues by exploring the connections drawn between the fictional and real worlds” (135). For my focal texts, the biopolitical and biotechnological are inseparable from our impact on ecosystems, climate, and animal and human bodies; they are complex parts of an entangled and nuanced assemblage.

In “Transpositions,” Braidotti argues “it is crucial to see the interconnections among the greenhouse effect, the status of women, racism and xenophobia, and frantic consumerism” (127). Understanding human embeddedness within nature and the need to be oriented towards a situated sense of enmeshment is one way that my focal texts contribute to that understanding. In “Situated Knowledges,” Haraway makes the argument that knowledge must be multiple and

partial and embedded for it to be accountable (190). Watts, Lai, Bacigalupi, and Atwood all offer forms of situated knowledge in their multiplicity of perspectives from different human and nonhuman positions, enabling a greater comprehension of our entanglements and their effects in shaping the world. There are several striking similarities in the approaches to embeddedness and resistance to anthropocentric narratives generated by Watts, Lai, Bacigalupi, and Atwood. Of note, the biotechnological contribution to the collapse of nature/culture binaries invites readers to critically re-examine where they locate the human and to reflect on their responsibilities and material becomings with the world.

These works of ecological science fiction also share a preoccupation with instability and uncertainty, particularly through their open endings. The open endings resist foreclosure but also leave readers to continue processing the many uncomfortable questions raised regarding our approaches to climate change and if we can still achieve some form of heterotopic possibility by working with technology and biotic systems. Watts and Atwood suggest that technology may best be used to rethink the species but also draw attention to the destructive possibilities that affect many aspects of the ecological mesh beyond us. For Lai and Bacigalupi, the transformative politics of becoming and finding new ways of being in the environment can be liberating yet are often the same products of technoscience that seek to foreclose on the future by binding us to an isolated and reduced sense of objectified being suggesting that they should not be relied on for deliverance from the state of the world due to a historical lack of responsibility to other creatures and ecologies, especially by Western nations.

Clive Hamilton contends climate change has become a new grand narrative, observing that while not every human has been responsible for having a significant role in causing the Anthropocene, “every human is destined to live it” (77). To that end though, not every human (or

nonhuman animal) is destined to live it equally, and for that reason, ecofiction depicting the scale of inequalities, as done in my focal narratives, may help us better critically approach environmental issues. Through their reorientations away from the nature/culture binary and anthropocentric methods of thinking about climate change and the environment, my focal texts invite a reconsideration of symbiotic becomings, mutations, and environmental entanglements. They ask us to imagine new imaginative solutions through those partnerships. However, the devastating effects of social inequality and climate change they present mitigates any utopic escapism, especially in their depictions of biogenetic capitalism's influence in producing the hyperobjects of climate change and species extinction of our present time. As we seek to manage and protect diverse ecologies and species, these texts suggest through their posthuman politics that we need to redirect said management practices towards ourselves and embrace a radically different set of ecological values that privilege adaptability and resilience over static views of nature. These posthuman ecofictions I have examined suggest alternative ways of being when approaching climate change and emphasize the importance of reorienting ourselves to imagine both the potentials and consequences of dynamic becomings through nonhuman nature and technology so that we might reshape our future trajectory.

6 Conclusion: Post-Anthropocentric Futurity

Through my study of these contemporary science fiction texts from biopolitical, posthuman, and ecological perspectives, I intended to achieve a deeper understanding of the complex interplay between technology, human and nonhuman animal bodies, and the environment that is shaped both by recent advances in genetics and biocomputing and in the deepening climate-driven anxiety/Anthropocene fixation that has become a defining feature of many twenty-first-century works. In selecting texts that span from the turn of the twenty-first century to the mid-2010s, one gains a clearer understanding of the posthuman turn developing that is being shaped both by this close engagement with developing biotechnologies and the ever-increasing threat of climate change and its associated ecological fallout than could be achieved by examining each of these texts in isolation. The preoccupation these narratives have with the impact of climate on bodies and environments also positions them within a subset of ecofiction that utilizes the posthuman lens as a means to reorient the reader towards a greater sense of embodied awareness and understanding of the sheer scale and complexity of climate change as well as the necessity to reinscribe the human in a way that is technologically, biologically, and environmentally embedded with other living and non-living phenomena.

There is a clear preoccupation in my focal texts not only with climate change and its effects but also on the impacts of biocapitalism and genetic engineering on our understanding of life, species, and the human. Many of them engage with themes of infection and invasion that push humanity into states of struggle, if not near-total extinction, effectively reversing narratives of technoscientific mastery and human domination of nature. In Watts's *Rifters Trilogy*, Behemoth threatens to wipe out all eukaryotic life and even manages to infect the Internet through the virtual wildlife spawning Madonna/Lenie memes, thus permeating both the species

barrier and the division of real and virtual. Lai's dreaming disease in *Salt Fish Girl* evokes anxieties about genetic pollution and the potential risks of life being treated as patented commodities. It also critically examines the racial and gendered implications of biotechnologies and their entanglements with colonial history and capitalism through its dreaming disease. *The Windup Girl* similarly explores the dangers of patenting in the invasive species and bioplagues that have contributed to a global food crisis that is exacerbated by the infertile proprietary seeds controlled by Western seed companies. In Atwood's *MaddAddam Trilogy*, Crake's plague leaves few human survivors as the world is left to be repopulated by the genetically modified Crakers and numerous hybrid lab-escaped creatures in its aftermath. The shared focus on infection, genetic mutation, and adaptation in these texts underscore the powers of nonhuman agencies to resist forms of technoscientific foreclosure or totalization.

These narratives also quite effectively employ posthuman characters and nonhuman agencies of animals, plants, environments, and bacteria and viruses to further emphasize the agential becomings and sources of power of nonhuman life to undermine human control and containment of nonhuman nature. This is something that becomes particularly important, especially since many of these texts either present the idea that the human needs to change from the inside out if it is to survive, or, at the very least, that it needs to be resituated within an ecological assemblage. Emphasizing the becomings of nature shifts the focus away from human triumph and survival and asks at what costs *should* humans survive over other species in the unstable and unpredictable globally warmed Anthropocene futures we have had an overwhelming hand in creating.

Beginning with the development of the cyborg figure from which the technoscientific posthuman figure has in part emerged, I identified and examined several significant themes

including divisions of born and made, and technology versus nature which still maintain a continued and significant presence in my contemporary focal texts. This initial chapter helped establish the close connection that cyborg literature has shared in engaging with and expressing anxieties about advancements in technology as well as shifting views regarding animals and responses to the nature-culture binary. While always in some way shaped by the Cartesian understanding of our body as a body-machine, things shift somewhat under the genetic focus where the power to change the body biologically, rather than solely technologically, becomes possible. However, by examining the understanding of the body and life in this project's focal texts, I found that these new biological possibilities continued to be expressed in machinic language enabled by biocomputing and the perception of our genes as a form of code equivalent and translatable into a digital code. The body under contemporary biopolitics is in many ways still perceived as a cyborg body-machine—one that can be both modified and interfaced through biological and non-biological parts (though not necessarily from the same host or even species). The biopolitical reduction of bodies to biomachines in the era of biocapitalism, however, clearly stood out among my texts as an area of concern and one that must change. The examination of the way biopolitics was depicted in these texts led to the realization that many of them shared a mutational/viral politics in emphasizing not only the fluidity of exchanges between and across bodies but also the liveliness of such bodies despite attempts to reduce them to bio-objects. I contend that their shared focus on becoming and mutationality suggests that a posthuman position must itself become infectious in order to achieve an ecologically embedded orientation.

While tracing out this recurring theme, I found that Watts, Lai, Bacigalupi, and Atwood engage in a posthuman politics that looks towards embracing forms of change/transformation (mutation) and nonhuman others alongside new ways of engaging with the environment without

totally rejecting or seeking salvation through technology, suggesting such a reorientation is—while difficult—a necessary step to properly developing an eco-politics that resists anthropocentrism and the exploitative practices it has enabled. The figure of the Enlightenment scientist who seeks salvation and transcendence in technoscience and who treats life as reducible to raw data is rejected as part of the formation of this ecopolitics; instead, these texts present the necessity of engaging with technology in ways that focus on the multiple interconnections of life where knowledge must be situated, partial, and embedded in its environment.

One might argue then that the critical posthuman texts I have explored continue with the tradition of cyborg texts to interrogate, and to some extent challenge, the reduction and reconstitution of the body in a mechanical context. In several respects, they do; however, the concerns of climate change and our current limits to fully anticipate its scale and effects on every living thing, as well as the development of animal studies in recent decades, has shifted this conversation towards a more biological focus that looks towards resituating the human back into nature. It does not necessarily mean humans cannot be perceived as biological machines, but that they are also assemblages that are made up of others and are a part of an even larger organic and nonorganic assemblage. The way these texts meditate on posthuman issues enables them to facilitate a view of the human as both a technologically and ecologically mediated assemblage, generating critical questions for the reader regarding how concepts such as ‘human rights’ ought to be extended beyond humans and even how the definition of the human itself may then require critical reassessment. As a species, we have allowed consumption to be one of the defining aspects of our identity, and our concept of “individual choice” means that rather than holding large corporate entities to account, the responsibility is falling upon “the individual” (Schmeink

57), thus further obscuring a clear understanding of how one might take action in a problem that is well beyond the scope of individuals to solve.

Forms of biomedica and the informatization of the body also mean that the ‘individual’ is seen as an increasingly abstract entity isolated from its interconnections with others. Examining the texts from a biopolitical perspective also allowed a deeper exploration of how they employ posthuman and eco-material orientations to destabilize anthropocentric prejudices and common social divisions of natural/artificial, born/made, and Nature/culture, that are maintained through the destructive biopolitical practices of bare life in the corporate labs depicted and in the Enlightenment humanist values that position humans as the sole sentient agents and thus assume that they inherently have more value than other forms of life (physical or virtual). By taking this direction for inquiry, I was able to establish how my focal texts presented both the need and possibility for changing how we define the species and its environmental relationship.

There is an evident impact on the shape of my focal texts’ preoccupations with climate change and the numerous biotechnological possibilities generated by advancements in genetic technology which made it necessary to examine how their posthuman politics engaged with these technoscientific developments and how this further extended into a broader focus on the multiple interactions and agencies occurring in non-human species and between species and environments. All my texts urged a critical re-evaluation of both the human and technoscience; through their disorientations of anthropocentric privileging and the common divisions drawn between technology and nature they clearly presented new and difficult questions for considering what a multispecies community ought to look like for approaching the future and to what extent we might have to change ourselves in order to overcome our social, cultural and, on some level, evolutionary practices. Further, the posthuman focus of all these narratives appears necessary,

both to destabilize the rooted anthropocentrism frequently found in disaster and dystopian narratives and to disorient and estrange the reader sufficiently that they may become more aware of the significance of nonhuman animals, the environment, and the complex and multiple interconnections that they form in which human beings are an embedded—but in no way central or even integral—part. The emergence of material ecocriticism and the environmental humanities occurring at the same time as these texts greatly informs a reading of them and the ecopolitics that they present to readers.

In taking a symptomatic approach to these works, I have aimed to model an effective way of engaging with ecologically focused narratives; I believe my project demonstrates opportunities to look at each of the texts in terms of their thematic occupations and to take a closer look at elements such as euphemistic language structure, alienation/disorientation, and juxtaposition of conflicting perspectives and what effects these elements might have in helping orient readers. Additionally, focusing my examination of these works under the themes of biopolitics, posthuman, and ecopolitical lenses has allowed me to place them in relation to each other, reflecting in the very structure of this project a sort of posthuman assemblage that draws together transdisciplinary theories, scientific development, and various cyborg, posthuman, feminist, and ecological approaches to tease out the interplay occurring between the texts and their genre preoccupations. I believe that using this method has offered an example of how close reading practices may benefit approaching posthuman and ecocritical fiction. It has also allowed me to build a stronger understanding of some of the major preoccupations of these works of science fiction emerging out of the socio-cultural and historical contexts in the early twenty-first century through reading them in context with each other.

In the process of this project, several significant facts were observed concerning the posthuman ecological shift in these texts. Watts's, Lai's, Bacigalupi's, and Atwood's narratives all share a critique of anthropocentrism as being the root of our treatment of matter and bodies (human and nonhuman) as a for-use form of biomatter which directly feeds into a cultural separation of humans from animals and nature that results in an inability to recognize ourselves as part of a complicated and tangled assemblage that confounds nature-culture divisions. Watts's narrative focuses more heavily on the interconnections of virtual and physical bodies and environments and the biopolitical consequences of corporate technoscience. Lai's, on the other hand, revolves around the intersections of bodies and biotechnologies with racial and gendered histories as well as the colonial and gendered intersections of bodies and environments. Bacigalupi and Atwood look more specifically at direct questions of natural/unnatural through genetic modification and human impact on the environment. Despite these different areas of focus, they all present the significant argument that the only way to form a new relationship to the environment for the future is to reorient ourselves away from an anthropocentric politics steeped in capitalism and techno-humanism.

The different approaches taken by the focal authors of this project are worth noting in how they accentuate nature's agential aspects and produce narratives that—in their mediated approach regarding biotechnology and posthuman relations—present the reader with possible new orientations through generating a sense of wonder, care, kinship, and respect for nonhuman relations and physical and virtual ecologies. For Watts, the emphasis on adaptation to environments and interconnections that span across physical and virtual species (to the point where the plague itself takes a virtual form) undermines anthropocentric agency and common imaginings of virtual and physical environments as being passive, empty receptacles for human

will. Paired with his characterization of the body as an environment, the *Rifters Trilogy* demands a reconceptualization of agency and offers readers nuanced considerations of kinships in the forms of the Seppuku virus's embedded sequences and Lenie's interactions with Anemone.

Lai, too, emphasizes a critical reassessment of the impact of environments on bodies, especially in emphasizing the roles of earth and water in the creation and maintenance of life cycles and by embracing a cyborg politics that highlights the interconnections of identities, technologies, and ways of being through both the dreaming sickness and the multiple and sometimes contradictory tangled connections between Miranda, Nu Wa, Evie, and the durian fruit. Moreover, *Salt Fish Girl* presents a clear doubling of polluted bodies with landscapes and the dual roles biotechnology serves in liberating bodies and rendering them objects through a liberal humanist privileging of the human subjecthood and the masculine scientific gaze—one which frequently renders the bodies of women and people of colour as objects in much the way it does animals. Doing so disrupts traditional binary thinking regarding technology—especially biotechnologies—by complicating how it functions.

Bacigalupi also engages with colonial and gendered histories and their relationships to disease, bodies, invasion narratives, and technoscience. His work exhibits greater attention to the role of climate change and anthropocentric environmental hubris with a large portion of the text focused on the fragility and interconnections across lifeforms in ecosystems and their mutual dependencies and exchanges (mutational, generative, and otherwise). Despite this greater preoccupation with climate change and species loss, *The Windup Girl* continues to highlight similar biopolitical definitions of life and the privileging of human beings and profit that are present in Watts's, Lai's, and Atwood's work, connecting it to material histories of colonization and Western domination.

Atwood and Bacigalupi both imagine potential posthuman communities in the closing scenes of their narrative, something that further emphasizes their ecologically oriented narratives and the necessary resituation of the human within an embedded mesh rather than as a perception of its existence—and that of its creations—as being somehow removed from nature. Atwood positions transgenic animals as a part of the natural world, able to fill its niches and giving voice to nonhuman animal agencies that directly challenge human exceptionalism and present hopeful possibilities for a multispecies future centred on community and negotiating the entanglements between human and nonhuman needs. Like Watts, Atwood challenges readers to seriously question valuing our species above others through the destruction and harm we cause to other humans, species, and the environment through biocapitalist practices—demanding readers perform a form of soul-searching that seems ever more imperative as climate change data continues to reveal our dire situation.

Through their different narrative and thematic approaches, Watts, Lai, Bacigalupi, and Atwood all offer forms of posthuman community in their narratives as a means of interrogating the bare-life categorical divisions made between human and animal, community and outsider that often lead to destructive actions to maintain them. They imagine possible alternatives through images of posthuman communities and alliances that create openings for becoming in ways that avoid those destructive forms of immunitary politics and welcome new forms of exchange, moving towards a form of *zoe*-based politics akin to the posthuman ethics proposed by Braidotti and the assemblage understanding of the self it produces. The forms of posthumanism depicted by my focal texts all demonstrate multiple examples of these embodied ways of inhabiting within an assemblage where one is always interconnected with other species and their environments (physical and virtual) in ever-shifting ways. I think it is of particular significance that despite

their differences in time of writing and focus, they all resist turning to technoscience as a utopic possibility of guaranteed salvation, instead, modelling forms of negotiated partnerships, communities, and transformative becomings with virtual/technological, human, and nonhuman others and ecologies to offer a space of hopeful possibility in the face of catastrophe.

A most interesting aspect of this posthuman politics expressed in many of these texts is the sense of virality and infection as a potential form of restoration or change—a becoming that reshapes us as it reshapes our relationships with other species and the environment. The running motifs of infection and virality within each text served the additional function of further demonstrating the embodied and assemblage networks we inhabit, showing the fluid connections between bodies, species, ecologies, and even how we exist as subjects and environments for other entities that are both separate and able to become parts of ourselves. Antonia Peroikou argues that “the posthuman becomes the site of a mutational, a viral, or better yet, a parasitic way of thinking that calls for the necessity of a different logic” (38). This does not mean that such imagery of infection, especially depictions of invasion and mutation, cannot also be inherently threatening—they can be as destructive as they can be full of new potential. The bio-plagues and diseases and the threat they pose to species—human and nonhuman—in the texts are real. As Braidotti states in *Posthuman Knowledge*, “The mutations induced by the posthuman convergence are unsettling and often startling” (13). At the time of writing this conclusion, our current society is undergoing its own abrupt and disorienting recalibration due to a “posthuman convergence” in the form of a viral invasion, one which—much like the infections in my focal texts—underscores our assemblage and embodied coexistence in the world and the increasing effects that may be felt from climate change. Like the disease that kills Anderson in *The Windup Girl*, COVID-19 is a zoonotic infection, an invader that has crossed species lines to infect

humans and nonhuman animals alike. It is also an environmental disease in the sense that there is evidence that cities with higher mortality rates are also those with increased levels of air pollution (Conticini et al).

Recent work in disease research and environmental science further suggests the necessity of preserving biodiversity in preventing disease, arguing that “an ecological approach to disease, rather than a simplistic ‘one germ, one disease’ approach will provide a richer understanding of disease-related outcomes,” and that there is a strong connection between biodiversity loss from anthropogenic activity and the increased risk of zoonotic infections (Karesh and Formenty 132). While written long before COVID-19, the narratives by Watts, Lai, Bacigalupi, and Atwood all stress the interconnections between disease, climate change, loss of biodiversity, and the repeated failure of and inability for us to depend on corporate technoscience to engineer solutions from patented and sought after bio-data. Their texts do not just offer visions of futures shaped by climate change, they offer ones where they have intrinsically connected the biopolitical positions facilitated by capitalism that separate humans from nature and animals and reduce life to biomatter as directly contributing to the crisis of climate change. This problem stems not just from pollution or carbon, it is systemically ingrained in capitalism and how life—especially nonhuman life—is considered a bio-object for data and profit. There is a need to account for how both late capitalism and humanity have brought about the state of the world so as to make sense of the human as a shaping force in the Anthropocene and to avoid erasure of the environmental and animal forces affecting us as factors beyond our control. To address this issue, my focal authors’ narratives all offer the potential to orient the reader towards many of the same conclusions and connections emerging out of the scientific community during COVID-19.

Watts, Lai, Bacigalupi, and Atwood's texts offer insights that might help approach the pandemic, both in the need to critically rethink our biopolitical systems and how the divisions of 'human' life versus nonhuman life have enabled it to be politically acceptable to deem some lives more valuable than others for economic recovery. The bare life economy not only enabled COVID-19 but will also enable new, and potentially more deadly zoonotic viruses to emerge as climate change and our mass extinctions continue, unless it is addressed. Their undermining of narratives of technoscientific mastery and privileging of posthuman partnerships also suggest we need to re-evaluate our relationships with other species—bacteria, animals, and the environment as a whole—to see what changes are necessary to live in a healthier and more ecologically focused way so that the exchanges that occurred between species have limited opportunities to happen again. The approaches of my focal texts to understand life and humans in an enmeshed ecological assemblage also offers vital insights into moving forward after COVID-19 in that we cannot simply fixate on an economic recovery, we must consider how the virus came about and how a major ecological reorientation away from our previously 'normal' habits of consumption and treatment of species as base biological material for consumption is necessary.

In addition to the viral/infectious trace that runs through my texts suggesting a posthuman mutational politics, there is also the way that the embeddedness and erosion of the traditional categories of nature vs. culture, natural vs. unnatural, and born vs. made generated through such connections also serve to provide a critique of natural and environmental discourse from a posthuman community perspective that is nuanced, complicated, and contested. Doing so means that categories such as 'invasive species' 'alien other' and 'unnatural' have the potential to reshape species and environments in ways that offer biodiversity, agency, and a new approach to the environment along with the risks of such changes. These texts achieve this, in no small part,

through the lively environments and emphasis on the enmeshed interconnections between multiple individuals along the lines of species and ecosystems which also leave a space for the reconsideration and potential redefinition of agency not limited to humans. Moreover, their narratives highlight the imperative need for something akin to Anat Pick's "creaturely ethics" which does not depend on fulfilling subjectivity or personhood but, instead, "lives in the recognition of the materiality and vulnerability of all living bodies, whether human or not, and in the absolute primacy of obligations over rights" (193). Alaimo observes that this is difficult since "agency is usually considered within the province of rational—and thus exclusively human—deliberation" but stresses the importance of alternative agencies that bring attention to nature's active features to cultivate ethical positions of affinity and concern for it (Alaimo, *Bodily Natures* 143). By examining the approaches taken by my focal authors to foreground the nonhuman agencies of plants, animals, landscapes, and virtual entities, my project has aimed to demonstrate the recognition of alternate agencies and human-nonhuman relations of care being presented by contemporary science fiction as being necessary for our future trajectory. Presenting the environment and its nonhuman animals as being active participants and able to affect the human world in powerful and unpredictable ways, especially in reaction to anthropogenic climate change are notable features of the narratives I've explored which appear to mark a shift in the genre in response to the bare life biopolitics that has resulted in exploitative biogenetic foreclosure on life and its contribution to environmental devastation.

As greater critical focus on eco-fiction as a genre emerges through critics such as Adeline Johns-Putra, Lawrence Buell, Timothy Clark, and Adam Trexler, there is as much a need to explore the development of climate change in science fiction as there is in realist fiction; however not all these theorists extend equal consideration to science fiction. In their discussion

of the climate change novel, Goodbody and Johns-Putra argue that genre fiction such as science fiction, cyberpunk, disaster novels, and fantasy fiction “Tend to employ highly conventional literary strategies of world-building and character development, with one-dimensional characters....wooden dialogue, stock motifs, clichéd plotlines, and unquestioned gender stereotypes” (237). I contend that my project demonstrates that my focal texts not only defy this assertion for their complex narratives and character development but also through the nuanced ways in which they engage with contemporary science and technology, matters of race and gender, nonhuman animals, and alternate ways of being in the world.

The posthuman works of fiction I have explored avoid an anthropocentric focus in the face of climate change, something vital for opening critical contemplation of it and its extensions beyond humans and human society. Furthermore, the strong presence of global warming and climate crisis in the settings of my focal authors’ texts demonstrate a growing preoccupation that may indicate a new norm in the genre. Science fiction (and realist fiction for that matter) may soon face the challenge of imagining immersive worlds that have not been shaped in some way by anthropogenic climate crisis. As noted by Schneider-Meyerson, while the majority of climate fiction texts set in a future time have parts where a particular character or narrator addresses present-day readers directly through thinking back on the mistakes of the past, “works that deliberately connected possible futures to specific contemporary activities were more likely to encourage such shifts in apperception and perspective” (488). Observing the range of texts from Watts’s and Lai’s emerging in the early 2000s and moving into Bacigalupi’s and Atwood’s novels that span from the mid-2000s to the 2010s further supports that this is an increased area of preoccupation for the genre through the notably more explicit impact that climate crisis has in the later texts and its connection between our present-day activities and events driving the

narrative arc, especially its intersections with biocapitalist economies and the effects of genomics and virtual media on shaping our understanding of lives and bodies as forms of biomedica.

The endings of these works of ecological science fiction are of great significance for their openness and the lingering level of uncertainty that they generate in their closing moments—ones that left an outstretched potential for hope—though not necessarily specifically for humanity. Johns-Putra has observed in *Climate Change and the Contemporary Novel* that many works of ecofiction resist “‘happy’ endings,” leading them to pose the poignant question, “Why, in the Anthropocene, when humans are threatened by a physical but not cosmological end times, is narrative dominated not by the sense of an ending but by the wish for no ending?” (166). Johns-Putra argues that this is an intentional critique of the desire for a meaningful ending and continuity. While Johns-Putra focuses on realist fiction, the ending is one all my focal narratives share. The use of the open ending is not new in and of itself, Baccolini and Moylan note it as a central presence in the new critical dystopias that emerged in the 1990s that facilitated hope because “by resisting closure: the ambiguous, open endings of these novels maintain the utopian impulse *within* the work” (7). As disaster narratives that in many ways feature dystopian societies resulting from climate change and unchecked capitalism, Watts’s, Lai’s, Bacigalupi’s and Atwood’s novels manifest that space of utopian impulse in their uncertain endings; however, it also doubles in facilitating both a potential critical reorientation and hope amidst the ever-present and inescapable destabilizing and chaotic influences of climate change and environmental disruption. I thus contend that their narratives present a space of radical possibility that is not only vital to delivering a form of tempered and ambiguous hope or potentiality through lack of closure but also one where the reader may critically undergo that

reorientation towards the alternate potentialities offered by embracing forms of posthuman responsibility, agency, and a greater awareness of their entanglements with nonhuman nature.

Climate change feels totalizing and frighteningly inescapable. There is no ‘pure’ nature to escape to and technoscience is both ill-equipped to offer a solution and often bears a significant role in our current situation through its exploitation of minerals, animals, environments, and genetic materials for profit. The disastrous, and in some cases apocalyptic, environmental situations in the narratives my project has examined may at a glance be considered depressing; however, “the utopian potentialities implied—and often made possible—by apocalyptic critique is the necessary critical movement to rescue us from a diagnosis of the world situation that would otherwise appear utterly hopeless (Canavan, “Introduction” 16). Based on the posthuman and environmental agencies in their texts that subvert a totalizing bare life biopolitics, the *Rifters Trilogy*, *Salt Fish Girl*, *The Windup Girl*, and the *MaddAddam Trilogy* seek to reform the present system through their critiques of it by moving towards the acknowledgment of multiple agencies and partnerships across species, bodies, and environments. By seeking recognition of these agencies and interconnections necessary to help us stay present, they also encourage readers to imagine new entanglements and forms of alliance and community we might negotiate with other species to find more ecologically sound ways to live. Things such as microbes that eat plastics or other human-generated hyperobjects, symbiotic partnerships, trans-genetic adaptations to help survive our environments should neither be thought of as a guaranteed means of salvation nor should they be excluded as ways of being with the environment going forward.

The focal texts in my project contribute to such discursive discussions and serve an important role in offering an accessible gateway for readers to be confronted with concrete images of interdependence, trans-species vulnerability, community, and material enmeshment

that will only become more vital as the need for radical reorientations of praxis and thought intensify. They also engage with a posthuman politics that offers an alternative that—while full of its own risks and without a guaranteed utopic hope of salvation for *humanity*—includes a trajectory by which we might engage in such collaborations to turn to new possibilities and take agency towards more positive ways of being in the world and environment that we have co-created. These orientations do not reject technology but demand a critical mediation of it with an awareness of the embedded existence we share with other species and our environments, and in that deanthropocentrizing space, a hopeful potential remains present.

There are several directions for further work to build on this project, not only in terms of an expanded examination focused on ecological science fiction but also explorations in how some of these works that are frequently dismissed as ‘disaster fiction’ might offer critically necessary examples of nonhuman agencies through their plagues or environmental crisis that have been previously overlooked. Watts’s *Rifters Trilogy* is an example of a series that may be dismissed in this way and there is a surprising lack of academic work on it. Extending the depth of scholarship on works such as the *Rifters Trilogy* and the application of nonhuman agential politics to look at the environments and nonhuman actors in other eco-focused genre works would reveal further insights into how posthuman ecological science fiction may offer a means of orienting readers towards a greater critical understanding of themselves as entangled, co-constituted, and ecologically bound subjects. Extending this research to look at a wider range of texts might also reveal a greater trend across the genre in works exploring nonhuman and environmental agencies, something that would certainly indicate its shifting trajectory to adapt to the increasing presence of climate change and its power to shape our physical and literary landscapes.

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