School of Media, Creative Arts and Social Inquiry

Life and the Posthuman

Serena Eva McClellan

This thesis is presented for the Degree of Doctor of Philosophy Of Curtin University

JULY 2021

DECLARATION

To the best of my knowledge, this thesis contains no material previously published by any other person except where due acknowledgement has been made.

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ABSTRACT

Life and the Posthuman frames humanism as an autopoietic (self-making) meaningmaking system that responds to post/humanist disturbances by more robustly defining its system-self: the human. Examining the logic by which this system of meaning conditionally reifies the human, I propose that a reciprocal and stabilising relationship can be identified between the naturalised concepts of "human" and "life." This relationship is scaffolded by a specific construction of nonliving nonbeing, as can be seen in representations of life made "other": the cordyceps fungus in *The Last of Us* and *The Girl with All the Gifts; Westworld*'s lifelike robots; and responses to the Fukushima nuclear event. These case studies suggest that a formula of (human/nonhuman)life/nonlife provides the preconditions out of which humans think themselves and their others.

Moving from a humanist questioning of what the human is to the posthumanist problem of reconfiguring what and how the post/human means, foundational binaries like human/nonhuman and life/nonlife can be read as texts in themselves. With reference to SF as a sympoietic mode that "makes-with," I attempt to show how these categories might be represented—and so thought—with a thickness of possible meaning that strains against the discursive structures that produce (and reduce) them as such. In particular, I consider how one might petromorphically portray stone worlding, so that worlding does not comprise metaphysical or perceptual capacities of living (human) beings but instead identifies the forces and intensities out of which "being," stone and otherwise, emerges.

ACKNOWLEDGEMENTS

This thesis has been a determined labour of love that would not have been accomplished without the help and encouragement of colleagues, friends, and family. It is safe to say that there have been several obstacles that could have potentially derailed me from ever completing this project, starting with my father's death only a few months after I began this process. Given this, I am inordinately aware of how lucky I am to have had such a strong support network to call on over the last several years.

First and foremost, I would like to thank my supervisors, Dr. Robert Briggs and Dr. Christina Lee. Without your rigorous feedback on countless drafts, this thesis would be nothing more than a collection of half-formed ideas poorly strung together. Additionally, I would like to thank you for having patience with my many digressions that led me into unexpected, but sometimes extraneous, territory. You never said "I told you so" whenever I sheepishly returned to you and said, "So I've decided to use the approach you suggested to me six months ago after all."

The most unexpected part of this thesis, the picturebook interlude between Chapters 6 and 7, would not have come to fruition without the help of Madeleine Hermawan. Maddy, thank you for going on a crazy journey with me, and for helping me translate a wishful dream into reality via your gorgeous illustrations.

I would also like to acknowledge the network of friends and colleagues at Curtin University with whom I have shared the past few years: Dr. Alira Callaghan, Dr. AnnaKatharina Laboissière, Dr. Ashleigh Angus, Dr. Elizabeth Pedler, Dr. Daniel Juckes, Dr. Jessica Priemus, Dr. Madison Magladry, Dr. Marie O'Rourke, Dr. Lana Stockton, Dr. Lucas Marie. While the PhD is mostly a solitary pursuit, I cannot help but feel that this is a journey that we have taken in parallel—though at different paces. I am so grateful for all your support and camaraderie: whether through scholarly feedback that made me think again, or through memes in our chat group that made me laugh, the contributions of your friendships have been vital.

Another vital friendship during this process has been that of Dr. Melissa Russell, my dearest friend. You have had the dubious honour of acting as what can only be described as an honorary third supervisor in periods of extreme self-doubt. Thank you for your unwavering encouragement, and for all the time you spent discussing my research with me. Whenever I was tempted to give up and abscond with the cats I live with, you were there to help me put things in perspective.

Speaking of cats, I would be remiss not to acknowledge the furry companions that have kept me company as I wrote this thesis: Luna and Flash have provided ample distraction in their demands for attention, and comfort in their steadfast affection.

My biggest thanks go to my mother, Robin, and my sister, Rachael. I write this as we bunker down together to ride out the coronavirus pandemic. For the first time in several years, not only are all three of us in the same country at the same time, we are living under one roof. As it always has, the prospect of crisis has only brought us closer together. Your daily company reminds me that finishing this thesis would have been literally impossible without your support, which has been both mental and material. Mom, you have been an endless source of comfort throughout this process. You provided me the stability of a home during the roughest periods of my life, and have had constant confidence in my abilities—even when I had none myself. Rachael, I know there have been times I bored and frustrated you over the last few years but, out of sisterly love, you have put up with my rambles about my research. I promise to do the same, no matter the endeavour you next turn your attention to.

Finally, to my father: while it's been long enough that your absence is no longer felt so keenly, we remember you with every well-cooked meal. I have no idea what you'd think of where I've ended up, but I imagine we'd have fun discussing it over a great bottle of wine.

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INTRODUCTION

In 2008, my father was diagnosed with brain cancer—an aggressive tumour the size of a lemon riddled his right frontal lobe. We were told that without medical intervention he would live no more than six months, and that those months would be increasingly painful and disorienting. At the same time, we were also warned of several possible negative side effects to surgery in such a delicate location: his personality could be forever altered; he could become partially paralysed; he might wake from the anaesthesia missing memories. While the doctors we consulted were careful to speak in general terms, even with these risks there was a sense that if the correct steps were taken, he could live for years. Advances in chemotherapy were quite promising, we were advised, and the bloodbrain barrier meant it was unlikely that the cancer would ever metastasise beyond the brain. One doctor said we should not worry about the fact that so much brain tissue needed to be removed, as neuroplasticity is an amazing thing. Excited to share recent medical findings, he explained that "Other parts of his brain will likely learn to pick up the slack."

We decided to go forward with medical intervention. My memory of the time is anchored to numbers: six days between initial consult and the surgery; one lobectomy; seven hours waiting for news; three seizures; four days of coma; countless cups of coffee used to bribe nurses into letting us stay outside of visiting hours. Finally, he woke. It was my turn to sit by his bedside, and I held my breath until he grew aware enough to recognise me. Though weakened by the coma, he was fully mobile. He had escaped the worst possible side effects of the surgery. Weeks of radiotherapy and months of chemotherapy later, the cancer was finally declared defeated. Medicine, it seemed, had prevailed.

In retrospect, my family had been so focused on my father *surviving* his tumour that we had not understood that if he lived, his life (and by proxy, our lives) would be irreparably changed. The source of trauma now resolved, we expected a seamless resumption of the status quo, and dismissed strange behaviour as a lingering side effect of the potent drugs he had been given. Despite our optimism and determination, and despite the medical diagnosis that labelled my father cured, he never fully recovered. His body had suffered too much, and in the years it took my father to die it seemed as if he progressively shed himself until nothing remained. His legs stopped responding reliably, and when he fell he was unable to get up without help. He lost control of his bladder and bowels. Eventually he was so physically weakened he became bed-bound, and we hauled him like an over-sized doll between his bed, his wheelchair, and his armchair. The lobectomy also impacted his personality, and he made increasingly rash decisions. While he'd always been stubborn, now he was almost childlike in his obstinance and was impossible to reason with. Though only in his mid-50s, he began to display symptoms of dementia: confusion and a lack of sustained concentration along with an inability to articulate or communicate his desires. He grew fixated on sound. "Uighur," he would say over and over again, voice rising and falling as he stretched out the different syllables: "whee-guuuur, whee-gurrrr, wheeee-gr." On a good day, my mother asked him why he made a mantra out of the words he read and heard. He responded, "It helps me hear I'm still alive."

My father died in 2014. This was, incidentally, the year that I began my PhD, though the correlation is not why I begin my thesis with this story. Rather, my interest in the posthuman is, in part, a product of this experience. During my father's decline I looked for any knowledge that might help his recovery and my family's return to normality. I took advantage of my university library access to read up on the latest medical and scientific advancements. I longed for the techno-utopian cyborg possibilities of science fiction and stumbled into the post-human ideal of transhumanism, imagining a medical trial that would provide a miraculous cure.¹ At the same time, the lessons of my undergraduate

¹ Over the course of this thesis, I will use the term "post-human" (with a hyphen) in reference to accounts, whether explicitly science fictional or not, of a figure "after" the human, one which embodies

degree in cultural studies made me wary that essentialising fantasies of the post-human obfuscate power relations and overlook the identity politics that sit at the heart of concepts of human nature. My fascination with the post-human, and the potential of augmenting my father beyond his failing human body, turned to the posthuman, and the sense that the capabilities we were so desperate to reclaim were themselves premised on shaky grounds.

The most immediate complication signalled by the "post" of the posthuman is that "human" is not a neutral label: the human condition is always conditional, and there is nothing natural about "human nature." I cannot remember when I first learned that "I" was "human," but as an adult I am now fully aware of my species designation, and of the common characteristics that purportedly distinguish my species from other forms of animal life. The assumption is that humans are cultural animals that are uniquely conscious of our own existence. We deliberately communicate through language, use tools, and have an immense capacity for impacting the world around us. However, the "archaeology of our thought easily shows man is an invention of recent date," as Michel Foucault explains in his conclusion to The Order of Things (387). A "historically specific thing" (Wolfe What is Posthumanism? xv), the "man" that Foucault identifies and the being that you, my human reader, think yourself as, is often traced to the Western humanism that emerges out of the European Enlightenment: an ideological framework of discursive processes that constructs, maintains, and values its human norm by opposing variant material formations via hierarchical binaries, preserving and valuing specific markers of race, class, gender, sexuality, ability, and so on.² The possibility of characterising my father's slow decline as the transition to a state that was less than fully human highlights that a sense of the essence or fundamental being of the human is constructed through processes of differentiation that reciprocally identify the human's others as Other, so that self-affirmation occurs through the negation of alterity. Said differently, the Western ideal of the human inherited

such a "supercession" or "degradation" of "the human" that is taken for a creature that is no longer (quite) human. I will use the term "posthuman" (without a hyphen) in reference to the conditions and effects engaged with or by critical posthumanism.

² For the purposes of expediency, I have not provided an account of the Enlightenment's solidification of the human subject as a unique being-in-the-world, to borrow from Martin Heidegger. For more detail, see Nick Mansfield's *Subjectivity: Theories of the Self from Freud to Haraway.* Additionally, while the Enlightenment is often pictured as a sharp temporal dividing line the undercurrents of this specific sense of the human can be traced further into history, as Larry Siedentop reveals in *Inventing the Individual: The Origins of Western Liberalism.*

from the Enlightenment, a norm which is "forged in the image of the male, white, well-off, educated" (Bourke 3), is polarised against the female, black, poor, uneducated, and so on. Via demarcations like these, definitions of human nature that are *definitive* maintain, as Elaine Graham argues, an "ontological hygiene' separating human from non-human, nature from culture, organism from machine, binary pairings whose mutual purification is complicit in discourses of modernity" (35). While internal dualisms like male/female, white/black, and dis/abled work to privilege a specific type of human, dualisms like human/animal and human/technology sanitise humanity of its external world.

However, changing real-world conditions have problematised humanism's ontological hygiene and the universalising assumptions out of which a sense of an essential human nature emerges. It seems that, as Foucault writes, the recent invention of man is "one that is perhaps nearing its end" (The Order of Things 387). For instance, experiments with xenotransplantation, where cells, blood, and organs are transplanted across different animal species erode naturalised biological distinctions and human bodily boundaries (Cooper). Both the natural capacities of the human species and the human/technology divide seem increasingly irrelevant as biohackers implant cybernetic devices beneath their skin in order to augment perceptual capacities by making external tools into new internal organs (Platoni). There is also growing evidence that nonhuman animals think and feel, and an inference that they, too, have the capacity to make deliberate choices about their actions (Andrews; Griffin). At the same time, advances in artificial intelligence have materialised consciousness-once thought to be an exclusively human characteristic-as an epiphenomenon of information processing (Hayles; Aleksandar and Gamez). Adding a sense of urgency to these developments is the recognition that anthropogenic climate change has wreaked havoc on a planetary scale that combines with the apocalyptic implications of the Anthropocene thesis of a world that is after humans, which provokes questions about the limits of human existence (Crutzen and Stoermer).

The incongruities of humanism's definitional binaries are made further evident as postmodernist scholarship combines with, and responds to, events like these. For example, in "A Cyborg Manifesto," first published in 1985, Donna Haraway famously proposed that "By the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism. In short, we are cyborgs. The cyborg is our ontology; it gives us our politics" (292). A creature of "leaky" distinctions (293), Haraway's cyborg questions the sense of human being that is simultaneously distinct from yet polluted by technology, as well as the presumption of the human's uniqueness among all animals. Rather than the "maze of dualisms" that makes up humanism's ontological hygiene, she argues for a "powerful infidel heteroglossia" (316). More recently, Jacques Derrida has also challenged the human/animal divide, arguing that,

None of the traits by which the most authorized philosophy or culture has thought it possible to recognize this 'proper of man'—none of them is, in all rigor, the exclusive reserve of what we humans call human. Either because some animals also possess such traits, or because man does not possess it as surely as is claimed. ("Violence Against Animals" 66)

While the evidence for this argument is beyond what I can cover here, one particularly compelling example is a 2019 viral video of Sugriva, a chimpanzee who became an internet phenomenon when she was filmed using Instagram (Milman). Deftly navigating a smartphone, Sugriva clicks out of a video of another chimp and scrolls through an endless feed of images, enlarges a picture of two women, returns to the feed to scroll some more, lingers on a video of herself. In addition to destabilising the binary of human/animal by documenting an animal acting with what appears to be a human-like level of discernment, this video (likely itself recorded on a smartphone) of Sugriva's easy use of sophisticated technology also gestures to current levels of technological proliferation, extension, and remediation. As Haraway had already observed as far back as the 1980s, then, the "last beachheads of [human] uniqueness have been polluted if not turned into amusement parks. Language, tool use, social behaviour, mental events, nothing really convincingly settles the separation of human and animal" ("Cyborg Manifesto" 293).

It is clear that the discursive foundations of the human are shifting, giving way to something that can be broadly referred to as the "posthuman." Posthumanists have taken advantage of this volatility to further decentre an essential understanding of human being in order to loosely articulate a "new *conceptualization* of the human" (Nayar 3). Though Haraway's cyborg predates theoretical frameworks that explicitly or formally target the posthuman, she responds to the same provocations.³ Namely, that the "concept of the

³ As will be identified in Chapter 1's elaboration on the specific sense of posthumanism that guides this thesis, Haraway's cyborg and a career-long ambition to decentre the human has led to her becoming a "proper name" for posthumanists (Colebrook and Weinstein xxv). Yet Haraway herself has expressed reservations about the label of "posthuman," partly due to the Eurocentric connotations associated with its root word of "man" and partly due to the easy slippage between "posthuman" and "posthuman." As Haraway identifies in one interview, post-human "colloquially means enhanced space race

human has exploded," as Rosi Braidotti writes in her introduction to *The Posthuman*, leaving in its wake a "post-human predicament" (1). This volatility and predicament is perhaps also owed to various science fictional imaginings of the "post-human" as a (human) being augmented or upgraded by technology: a human 2.0 which literally comes *after* the human. These are the fantasies of "popular" post-humanism (Nayar 4; Herbrechter 95; Simon 2), which reflexively reify the human as an ontologically discrete point that can be surpassed through the strategic implementation of technoscience and ingenuity.

By contrast, the specific sense of posthumanism evoked by scholars like Nayar and Braidotti might rather be referred to as a "critical" posthumanism (Nayar 8; Herbrechter 94; Didur 100). The posthuman (without the hyphen) is here viewed as a "genealogical and a navigational tool" (Braidotti *The Posthuman* 5), rather than as an essential ontological reality—though the posthuman does also describe a very real material condition of being in which "many humans now, and increasingly will, live with chemically, surgically, technologically modified bodies and/or in close conjunction (networked) with machines and other organic forms" (Nayar 3). The complex goals of this approach are somewhat paradoxical, involving tracing how humans came to know themselves as such in order to consider how this knowledge might be rewritten to depart from inherited humanist understandings, while also acknowledging that "neither humanism nor the human can in fact be overcome in any straightforward *dialectical* or historical fashion" (Herbrechter 94). As Neil Badmington argues,

For early uses of "posthuman" to explicitly identify a "new" sense of the human that is distinct from the figure that Western humanism centres on, see *Posthuman Bodies*, edited by Judith Halberstam and Ira Livingston. The essays within *Posthuman Bodies*, published 1995, argue that normative senses of the human body have given way to a "posthuman condition," and offer an "open invitation to engage discursive and bodily configurations that displace the human, humanism, and the humanities" (vii). Alternatively, in *How We Became Posthuman*, published 1999, N. Katherine Hayles traces "how information lost its body" (5) over the course of the Macy conferences on cybernetics, which took place between 1946 and 1953. She writes that a historically specific posthuman "point of view" that "privileges informational patterns over material instantiation" (2) develops out of this context.

and post-space race type human, the kind of human who goes off-planet for a final human trajectory. It's fundamentally a teleological term" (Franklin 50). Despite this discomfort, Haraway's *Staying with the Trouble: Making Kin in the Chthulucene* is part of Minnesota Press's "Posthumanities" series, and Haraway acknowledges that the term provides "a kind of acknowledgement of collegiality and friendship and alliance with people for whom the term does a lot of work" (Franklin 50).

It seems to me that many are a little too quick to affirm an absolute break with humanism, and a little too reluctant to attend to what remains of humanism in the posthumanist landscape.... The familiar, easy announcements of a complete change of terrain, a pure outside, need to be complemented by work that speaks to humanism's ghost, to the reappearance of the inside within the outside. Both halves of the signifier in question demand attention. (15)

Where posthumanism repeats humanism "it does so in a certain way and with a view to the deconstruction of anthropocentric thought" (ibid). Just as imagining the post-human reifies the human that it presumably surpasses, imagining that we might be able to transcend anthropocentrism or think the "pure outside" to the material-discursive context of our lived human realities reinforces the progressivist and emancipatory myths of humanism. Assuming that humanism can be fully overcome or left behind, Christopher Peterson explains, "ironically subscribes to a basic humanist assumption with regard to volition and agency, as if the 'end' of Humanism might be subjected to human control, as if we bear the capacity to erase the traces of Humanism from either the present or an imagined future" (128). Following Peterson, there is an opportunity to partially counter the humanist rhetoric of such post-human imaginings by framing the posthuman so that "the advent of the posthuman always remains to come" (129). Drawing on Derrida's formula of "democracy to come" (*Spectres of Marx* 81), this is a sense of the posthuman that never really arrives, a "post" that is never fully achieved, a completion always deferred.

What is at stake in the move towards, and the deferring of, the posthuman are the preconditions out of which assumptions of human (and so, reflexively, posthuman) nature are derived. One such precondition can be found in the narrative of my father's slow decline. Against the conventional common-sense standard of a fully functional human, my father's deteriorated physical health and mental faculties are easily categorised as something less-than. Nevertheless, for as long as possible he insistently reminded himself—and those listening—that he was still present, "still alive." I came to see that this continued insistence suggests a link between the human and life, or that what it means to be human may be reciprocally bound up with both the determination of what life is and the recognition of being alive. Indeed, it is relatively undeniable that the prioritisation and idealisation of a specific mode of life, the "human" that humanism creates and maintains via ongoing practices of ontological hygiene, has legitimised and precipitated violent acts—wide-scale deforestation, species extinction, genocide—towards forms of life that have been deemed other or lesser. Seeking a "beyond" to these sorts of destructive events,

posthumanists have sought to interrogate how the human is understood as a being that is alive, and also the means by which the category of life is denied to the human's others. As Jami Weinstein and Claire Colebrook write in their Introduction to *Posthumous Life: Theorizing Beyond the Posthuman*, first in the recently created "Critical Life Studies" series, "Life is not one more thing in the world, for ways of thinking about, knowing, and transforming life dramatically change what might count as living and the epistemic and ontological status of life itself" (4). The generality of what it means to be human can be viewed as dependent on the specific historical, cultural, and material circumstances that produce and give meaning to an idealised mode of *living* being that is itself named "human." By inference of the "post," one can extrapolate that a concept of "life" might similarly be imbricated with the "posthuman," even while posthumanists seek to critique discourses of life. With this in mind, and taking up Badmington's challenge to think through "what remains of humanism in the posthumanist landscape" (15), this thesis interrogates the ways that naturalised understandings of "life" and its others perhaps shape (and are shaped by) what it means to be human—even within posthuman contexts.

APPROACH AND STRUCTURE

Due to my background in cultural studies, which views meaning as an effect of representational systems, this thesis relies heavily on textual analysis of key case studies and often draws on postmodern frameworks like Foucault's genealogical historicity and Derrida's deconstructive critique to unravel the naturalised categories of "life" and "human." While these paradigms offer the conceptual tools that I was most familiar with at the start of my project, posthumanism is an interdisciplinary perspective informed by "academic poststructuralism, postmodernism, feminist and post-colonial studies, and science and technology studies" (Simon 2-3) and by questions of "what it means to be human under the conditions of globalization, technoscience, late capitalism and climate change" (Herbrechter 94). Considering the varied origins and interests of posthumanism, exploring and thinking posthumanist concerns via the conceptual tools of a single disciplinary silo, even one as fuzzily bounded as cultural studies, limits the possibilities to which this research area might lead. As Haraway explains in relation to the materialsemiotic processes of knowledge formation and discourse, "It matters what matters we use to think other matters with..., what thoughts think thoughts, what descriptions describe descriptions" (Staying with the Trouble 12). Thus, not only are meaning and interpretation situated within specific systems of knowledge, *what* is said cannot be disentangled from *how* a thing is said. Or, as Haraway more directly addresses in relation to the material *and* semiotic nature of discourse in *Primate Visions: Gender, Race, and Nature in the World of Modern Science*, knowledge is produced, disseminated, and negotiated through material means and ideological conditions. Scientific practice, for example, which tells truth claims about knowledge of the world, "may be considered a kind of story-telling practice—a rule-governed, constrained, historically changing craft of narrating the history of nature..., a story-telling practice in the sense of historically specific practices of interpretation and testimony" (4). Karen Barad's theory of "agential realism" puts forward a similar perspective. She writes that "Boundary-making practices, that is, discursive practices, are fully implicated in the dynamics of intra-activity through which phenomena come to matter. In other words, materiality is discursive... just as discursive practices are always already material (i.e., they are ongoing material (re)configurings of the world)" ("Posthumanist Performativity" 822). Thinking the world differently means thinking *via* different means, altering the apparatus or discursive practice that one uses to construct understanding.

Thus, in (re)thinking (post)humanism over the course of this thesis I syncretically mine concepts and technics from across disciplines to "think-with" unexpected thoughts.⁴ While I do not seek to disconnect concepts from their contexts, I deliberately mix and mingle multiple planes of knowledge in order to build heterogeneity and plurality into the very structure of my argument. The strength of this approach is implicit in Paul Saukko's advice that "to unravel the complex historical and political agendas and struggles embedded in texts and interpretation, one needs to analyze them from several different perspectives that flesh out their diverse commitments and blind spots" (100). With the ambition of addressing many of the "perspectives" which maintain dominant Western

⁴ "Syncretism," Vassilis Lambropoulos explains, refers to the "forging together of disparate, often incompatible elements from different systems; and to their intermingling and blending... connot[ing] not juxtaposition (the early postmodern idea of comparison) or fusion (the late postmodern idea of comparison) but mixing and mingling" (225). Note that syncretism can lead to an elision of difference if one takes the stance that some sort of underlying unity draws together disparate systems of knowledge (religion, philosophy, science, but also Western discourse and its marginalised others). This can be somewhat mitigated by directing careful attention towards the particularities of the unique materialsemiotic contexts of concepts, but also if one deploys multiple theoretical frameworks not as a way to describe similarity but as a way to offer vantages points from which to observe the blind spots or aporia of individual ideological stances.

understandings of life and the human, I have fossicked through fiction and documentary, pop-culture and government policy, systems theory and geological stratification, philosophical reflection and scientific reporting. Regardless of the conceptual tools used or the texts explored, my research commitment remains the same: to contextualise and critically analyse the dominant ideologies and discourses of life with which an ontology of the human appears to be reciprocally (re)constructed, particularly within seemingly posthumanist contexts.

The body of this thesis is divided into three parts. Part 1 provides the underpinnings of the broader trajectory of the project, identifying key theoretical "tools," clarifying the specific sense of posthumanism that informs the commitments of my research approach, and contextualising the stance that the concepts of "life" and "human" interlink within humanism.

Chapter 1, "The Problems of Posthumanism," opens with a brief discussion of the posthumanist context, post-human figures and time, and the philosophical ambitions of critical posthumanism in order to elaborate the *problem* of posthumanism, paying due reference to Gilles Deleuze and Félix Guattari's characterisation of problems as (re)configurations of the forces by which questions are posed and concepts are composed. Destabilising the human in a lasting way requires this sort of reconfiguration, such that, as Cary Wolfe puts it, "the nature of thought itself must change if it is to be posthumanist" (What is Posthumanism? xvi). One of the reasons that this change is so difficult, I suggest, is that humanism functions much like a robust autopoietic (self-making) system.⁵ Namely, humanism can be understood as reproducing itself by incorporating potential disturbances-like those that have provoked posthumanism and which posthumanists seek to further inculcate-into progressively sophisticated structures of differentiation that consequently reify the self of the system (the human) with more specificity. As has been identified, the current concept of "human" is frequently traced to an ideological framework solidified following the discursive developments of the European Enlightenment. Throughout this thesis I will use "humanism" to refer to this system of meaning and "human" to refer to the discrete sense of being that emerges from, and is

⁵ As will be discussed in Chapter 1, in its initial form "autopoiesis" (self-making or self-reproduction) theorises how life self-(re)creates according to internal structures that distinguish an organism from its environment via information feedback loops (Maturana and Varela). The concept has since been extrapolated beyond its original biological context to highlight processes of differentiation in meaning-making systems (Luhmann).

stabilised by, this system of meaning. Note that these concepts are co-constitutive, and do not easily disentangle. As will be detailed in Chapter 1's discussion of autopoiesis, systems do not precede their system-selves, nor do system-selves precede their systems.

The theory of autopoiesis is particularly appealing to posthumanists seeking to characterise the human (and other) being as something other than an ontologically discrete essence, and so the concept has become something of an organising thought within the post-humanities. However, thinking with and through the lens of autopoiesis directs the posthumanist's attention towards autopoietic components like homeostatic stability and boundary (re)making. As a consequence, these quite humanist priorities are more likely to be unintentionally replicated. A different vantage point, I propose, can be found by thinking with the concept of sympoiesis (making-with), which orients one towards balancing and competing relations rather than towards relational boundaries of discrete entities.⁶ This differing emphasis is particularly useful for developing posthuman problems that do not merely question old patterns of thought, but which attempt to re-think the forces out of which those patterns are first thought.

Chapter 2, "The Politics of Life," narrows the scope of this thesis to the forces which, within humanism, distinguish life from its others. I do not attempt to determine what life itself *is*. Instead, I focus on how understandings of this naturalised category of organic material as that which is born, grows, reproduces, responds to stimuli, and dies, are reciprocally bound up with the means by which human life is produced and differentiated as such. As Foucault describes via the neologisms of "biopolitics" and "biopower," in modernity the state acquires "power over man insofar as man is a living being," so that the human subject is subjected to, and subjectivised by, biopolitical processes that reflexively determine which living beings *count* as "man-as-species" (*"Society Must Be Defended"* 239; 243). Drawing critical attention to this politicisation, Foucault's theorisation of biopolitics, along with the variations offered by Giorgio Agamben, Achille Mbembe, and Elizabeth Povinelli, makes visible various figures and tactics that have been used to naturalise the interlinked categories of "life" and "human." Using the framework introduced in Chapter

⁶ This concept refers to the "making-with" qualities of ecological systems, rather than the selfreproducing qualities of discrete organic lives. Sympoiesis, Haraway explains, "enfolds autopoiesis and generatively unfurls and extends it" (*Staying with the Trouble* 58). The theory speaks to "relationships and linkages rather than components" (Dempster 2).

1, these figures and tactics can be read as event-elements informing an image of biological normalcy for the specific mode of life that is named human.

Part 2 builds on the frameworks introduced in earlier chapters to explore instances of life made "other." The case studies used in this section of the thesis resonate with the strange state of not-quite-meaningfully-alive that my father came to occupy in his final months. As with my father's decline, these texts reveal the boundaries of what (proper) human life is thought to be. Framing humanism as an autopoietic meaning-making system, on the surface many of these texts act as stabilising event-elements which work to subdue post/humanist⁷ disturbances and reflexively make the structures by which the human self-creates more complex.

Chapter 3, "Like Something Out of Science Fiction," evidences my claim that humanism can be understood as an autopoietic system by addressing the role that the concept of "monstrous" life plays in negotiating cultural anxieties. I do this by examining three representations of the Ophiocordyceps unilateralis, more popularly known as the "cordyceps" fungus, beginning with a section of the 2006 BBC nature documentary series Planet Earth that features "zombie ants" which are host to the cordyceps. Demonstrating a crossing of naturalised boundaries like animal-human/plant-fungus, life/death, and self/other, the cordyceps as represented in this clip poses a metaphysical threat that has the potential to disrupt the ontological hygiene by which the human self-reproduces. The cultural anxieties implicit in this disruption are amplified to the point of apocalypse in the survivalist horror video game The Last of Us (2013) and the YA novel The Girl with All the Gifts (2013). Both narrativise the cordyceps as a tangible threat to humans by portraying the fungus evolving to create fungal-human zombies, monstrous "post-humans" that bring about the end of civilisation. As I will elaborate, (post)apocalyptic texts explore "what ought to survive or remain, after the absence of humanity as we now know it" (Colebrook Death of the PostHuman 190), and so tend to more clearly define what the contemporary culture values. Thus, in these texts it seems that the unsettling implications of the cordyceps are put to work via a discourse of monstrosity to restabilise meaning by reifying

⁷ I use this formula of "post/human" to simultaneously indicate both the posthuman and the posthuman, while also nodding towards Elaine Graham's definition of the "post/human as that which both confounds but also holds up to scrutiny the terms on which the quintessentially human will be conceived" (11).

a more specifically human mode of life that is constructed against the liminal fungalzombie post-humans that ravage post-apocalyptic settings.

Chapter 4, "Lifelike, But Not Alive?"," similarly explores the autopoietic tendencies of humanism, but contends that making thinking-life central to how being is encountered can further reinforce structures of exclusion and domination. "Thinking-life" refers to the specific ontology of life that emerges out of the theorisation of autopoiesis, which in its initial biological context renders life as comprising cognitive systems that materially process and produce information. As will be indicated via a discussion of Emmanuel Levinas' relational ethics, when the self meets alterity via existing ontological categories the multiplicity of the other is "totalized" as a singularity (Totality and Infinity 25). The conflation of thinking-life makes "knowing" an attribute of whether the organic system in question is complex enough to be aware of its own thinking-life, so that the question of life is interpenetrated with evaluations of thinking and knowing. The totalising dangers of this sense of life are illustrated in the science fiction television series Westworld (2016ongoing), in which an ideal of independent consciousness is used to distinguish humanity from the "lifelike" pre-scripted consciousness of machines. The binaries of person/thing and living/lifelike-nonliving are shored up against increasingly sophisticated examples of artificial life (AL) and artificial intelligence (AI). These divisions are used to justify an uncanny necropolitics, in which simulated thinking-life is produced to experience (not really real) death at human hands. A posthumanist complication to this humanist orientation is found in AI's uncanny doubling of consciousness, which can be read as deessentialising "knowing." The potential of simulated consciousness suggests that consciousness is itself a regulative ideal, and that to be recognised as knowing requires that humans (and otherwise) perform its stylised attributes.

Chapter 5, "Living and Dying in the Ruins," examines representations of, and responses to, the 2011 nuclear meltdown in Japan's Fukushima prefecture to argue that a concept of productive life plays a pivotal role in theorisations and experiences of the Anthropocene. Paul Crutzen and Eugene Stoermer proposed the "Anthropocene" label as a way to recognise that the human species has become "a significant geological, morphological force" (17). Via anthropogenic climate change, humanity has inscribed its presence into an earth that, via these same forcefully inscriptive processes, is also made progressively hostile to human life and human ways of understanding and managing life. The Fukushima meltdown is one such example. Rather than inciting a singular nuclear end to the world in its totality, this nuclear incident ended (and continues to end) multiple overlapping life-worlds. As such, I contextualise the Fukushima exclusion zone as an example of a fragmentary pre-apocalypse, a liminal space caught between a productive (human) present and the imagined empty (post-human) future. While these contaminated ruins are toxic to humans and cannot sustain capitalist agricultural demand, humanist decontamination projects attempt to re-exert control and make the zone "livable" again. Conversely, I propose that a sympoietic posthumanist perspective looks towards the relations that emerge in a space that is host to both (human and living) extinction and (nonhuman and nonliving) proliferation.

Part 3 reorients the thesis towards nonlife, the implicit exterior that brackets previously addressed binaries: (human/nonhuman)life/nonlife. Moving from science fiction as an object of study to SF as a critical methodology, I consider how nonlife might be represented—and so thought—outside of totalising it as humanity's ultimate and subordinate other (barren, inert, and empty material awaiting human intervention) or as humanity's extension (though inorganic, similarly vital).

Chapter 6, "String Figures, So Far," addresses the limits and possibilities of representing nonhuman worlds as seen in Jakob von Uexküll's A Stroll Through the Worlds of Animals and Men: A Picture Book of Invisible Worlds, Ursula K. Le Guin's "The Author of the Acacia Seeds: and Other Extracts from the Journal of the Association of Therolinguistics," and Thomas Nagel's "What Is It Like to Be a Bat?" Though only Le Guin's short story is conventionally categorised as science fiction, I position all three texts as SF. Building on Haraway's sense of SF as a material-semiotic sign which encapsulates "science fiction, speculative fabulation, string figures, speculative feminism, so far" (Haraway Staying with the Trouble 2), SF is more than a genre. Making the familiar strange, it is a mode of thought that is well suited to thinking sympoietically. Of particular relevance to my reorientation towards nonlife is Uexküll's strategy of constructing animal Umwelt, or worlding the animal. As his title indicates, he fancifully "strolls" through "invisible worlds" beyond the human by mapping perceptual capacities to describe an SF of multiple overlapping yet distinct life-worlds. Positioning each animal as a subject in its own world of subject/object relations, Uexküll disconnects subjecthood from humanity's rational capacities and the ideal of personhood by beginning with the presumption that there is something like being an animal—even if that being is phenomenologically impossible for the human to experience first-hand. Likewise, I propose beginning with the stance that there is something like nonliving subjectivity. Directly countering Martin Heidegger's statement that "The stone is worldless" (World, Finitude, Solitude 184) because it lacks the capacity for

metaphysical reflection, I see sympoietic possibility in shifting the terrain of such assumptions by placing stone-subjects in a nexus of worlding subject/object relations.

Taking seriously the idea that different apparatuses of knowledge engender different ways of knowing, I then take an interlude from the conventional parameters of the thesis format to experiment with putting SF into praxis. Occupying a liminal space between Chapters 6 and 7, *Stone Worlding* is a children's picturebook that I developed in string-figuring collaboration with Madeline Harmawan, a Perth-based illustrator. Re-picturing the simplified narrative used to teach children about the geological "life" cycle, the "incomplete imaginings" (Loo and Sellbach 52) of the picturebook format depict not *the* world but *a* (subject-stone's) worlding. Moving away from the perceptual capacities of organic life, this world is mapped by fancifully narrativising lithic or petromorphic worlding by referencing the material relations that this stone would "experience" like gravity, pressure, temperature, and moisture.

Finally, Chapter 7, "Might Stone Be?," refers to this experiment to argue that the inherent SF tendencies of picturebooking help stall the stabilisation of meaning into (humanist) questions. The picturebook can be understood as a technic that preserves knowledge; one which also makes visible the *use* of technics to remediate reality (Loo and Sellbach). This representational strategy does not purport to portray its object of study via the positivist notion of scientific objectivity. Instead, the simplified narratives and polysemic qualities of the genre prompt the reader to think with the picturebook in order to piece together meaning. Invested with a "plurality of possibilities" (Wyilie 191), picturebooking is a technic that opens up towards the sympoietic instability of posthuman problems.

The "so far" dimension of SF reminds that the picturebook experiment of *Stone Worlding* should not be viewed as a posthumanist "solution" to humanism's delineation of life/nonlife, or of human/nonhuman. As was discussed above, the belief that one can permanently progress completely beyond humanism merely repeats old narratives of human mastery and perfectibility. Additionally, humanism has a "capacity for regeneration and, quite literally, recapitulation" (Badmington 11), as is seen in the characterisation of humanism as an autopoietic system. (Re)negotiating the human and life, "Stone Worlding," the larger argument of this thesis, and indeed posthumanism as a whole push collectively towards, but never fully arrives at, the posthuman to come. PART 1

1

THE PROBLEMS OF POSTHUMANISM

"I WILL SAY, QUITE DECISIVELY, THAT IT DEPENDS"

Any time I am asked to characterise the field of posthumanism, I am reminded of a passage from John Caputo's *Against Ethics*. Writing on the irreducibility of events, the individual, and on the role of proper names in identifying an individual, he observes: "You can lose a lot of time debating whether the individual who has the same proper name at age six months and at age sixty-six is the 'same person.' If you press me for an answer on this tormented subject, I will say, quite decisively, that it depends" (95). Similarly, when pressed to circumscribe boundaries to posthumanism or to describe the posthuman, I find myself saying, quite decisively, that it depends.

The simplest way to explain posthumanism is to say that this label identifies a rapidly growing body of work that negotiates the disruption of the human in various ways. And yet, this simple statement can immediately be made more complex: the concept and material embodiment of the "human" has been disrupted in various ways; disruptions to the "human" have themselves been negotiated in various ways, prompting multiple branches of posthumanism to emerge. The specific sense of posthumanism that I am inspired by, often called a *critical* posthumanism, generally negotiates the disruption of the human by "oppos[ing] the fantasies of disembodiment and autonomy [that have been] inherited from humanism itself" (Wolfe *What is Posthumanism?* xv). Folded into this approach is an attempt to "re-think," or to think beyond the limits of the human without recapitulating to the more restrictive and persistent discourses of humanism. "Beyond"

should not imply the ability to think entirely outside of the human—I am, after all, subjected to and by a specific set of discursive formations. Instead, this use of "beyond" echoes Niall Lucy's use in *Beyond Semiotics: Text, Culture and Technology*. Lucy explains that his title does not refer to a desire to (or the possibility of) going literally beyond or outside of semiotics, perhaps by replacing it with some other system. Rather, "the movement away from semiotics is at the same time internal to semiotics itself... to go beyond semiotics while remaining within is to open (or re-open) Saussure's sign to indefinite, disclosural, nonoppositional effects or possibilities which are internal to it, in potential" (4). Similarly, thinking "beyond" the human entails, for posthumanists, a self-reflexive thinking from within: inside the very subject matter that determines the patterns of thought that are used to define and regulate the human in the first place.

The goal when thinking about what posthumanism means is therefore not to be overly prescriptive, but to think in ways that are simultaneously highly contingent and inconclusive. A helpful analogy is that posthumanism often aspires to construct an SF along the lines of Donna Haraway's string figures, which "is about giving and receiving patterns, dropping threads and failing but sometimes finding something that works, something consequential and maybe even beautiful, that wasn't there before" (*Staying with the Trouble* 10).⁸ This is not a straightforward task, and there is no easy conclusion in sight. As Weinstein and Colebrook write, "thinking beyond and outside the habit of the human, let alone life, is a relentless struggle—it is the challenge of trying to carve out a 'something else' that ultimately might never be identified" (13). It is possible, though, that striving for a state of "decisively, it depends" may offer one way of navigating this struggle.

In addition to developing this claim, this chapter is devoted to further clarifying the sense of posthumanism that guides this thesis' consideration of the role that "life" plays in how the human (and, correspondingly, the posthuman) is thought and rethought. However, in the interests of "decisively, it depends" I do not trace a detailed cartography of posthumanism as a concept or critical lens. Instead, my discussion strives for the loose consistency that Gilles Deleuze and Félix Guattari gesture towards when they write that "The problem of philosophy is to acquire a consistency without losing the infinite into

⁸ As discussed in the Introduction to this thesis, Haraway expands the meaning of "SF" beyond the "science-fiction" that the abbreviation is typically associated with, so that the label encompasses "science fiction, speculative fabulation, string figures, speculative feminism, science fact, so far" (*Staying with the Trouble* 2). For further discussion of SF, see Part 3 of the thesis, particularly Chapter 6.

which thought plunges" (*What is Philosophy?* 42). The definitions or parameters that I provide should therefore be viewed as consistent enough for the immediate discussion, but easily destabilised. I am not attempting to describe a universal posthumanist project. Instead, I want to outline a specific sense of posthuman/ism that emerges from three interrelated variations of the term: a posthumanist context; post-human figures and time; and posthumanism as a problem. To unfold how a posthuman problem might be articulated, I will then detour through the concept of autopoiesis (self-making), a discussion of its role in the particular sense of posthumanism outlined by Cary Wolfe, before landing on Donna Haraway's iteration of a sympoietic (making-with) and composting "posthumusism."

A POSTHUMANIST CONTEXT

Determining a posthumanist historical moment-or the context which has sparked the current reconsideration of the human and provoked post/human speculations and post/humanist theories-begins with the observation that the broadly coherent Western model of the human subject has been put under increasing strain over the course of the late twentieth century. A consequence of this is that, as Rosi Braidotti succinctly explains, "the concept of the human has exploded" (The Posthuman 1). The collective critical pressure from postmodernist scholarly efforts has pushed the meaning of the human ever outwards, techno-scientific advances have normalised a mode of human life braided together with technology, and humanity's supposedly exceptional nature seems less and less significant as more is learned about animal capacities. Because of developments like these, humans are now faced with the question of: "What happens when human exceptionalism and bounded liberalism, those old saws of Western philosophy and political economics, become unthinkable in the best sciences, whether natural or social? Seriously unthinkable: not available to think with" (Haraway Staying with the Trouble 5). Combined, these factors provoke what can be broadly called the "posthuman condition," in which a dawning unthinkable-ness of the human has made what it means to be human (and what it means to be human) increasingly fraught. Braidotti describes this as a "qualitative shift in our thinking about what exactly is the basic unit of common reference for our species, our polity and our relationship with other inhabitants of this planet" (The Posthuman 1-2). Due to its sprawling origins, the theoretical grounding that underpins the posthuman condition is on the one hand wildly interdisciplinary, while also relying heavily on "conceptual elements mined from a series of proper names that include Friedrich

Nietzsche, Martin Heidegger, Charles Darwin, Gilles Deleuze, Jacques Derrida, Donna Haraway, Simone Weil, and Michel Foucault" (Colebrook and Weinstein xxv). Ultimately posthumanism, in any of its senses,

would not be possible—would be literally unthinkable—without readily identifiable models, concepts, terms, and so on (disciplinary developments in information theory, cognitive ethology, semiology, to name just a few) that are distinctly *modern* disciplinary products with their own particular histories and developments of the sort described by Foucault in *The Order of Things*. (Wolfe *What is Posthumanism?* 121)

While these works do not always obviously prefigure posthumanism, and in some instances these scholars have outright denied the label of "posthumanist,"⁹ they provide the conditions by which a problem like posthumanism can be proposed in the first place. Accordingly, posthumanism is easily located as highly contemporary, a postmodern response to recent technological developments and cultural concerns.

True to the "decisively, it depends" nature of posthumanism, the boundaries drawn by this temporalisation can be immediately complicated. For example, in *What is Posthumanism?* Wolfe argues that posthumanism comes "both before and after humanism" (xv). Posthumanism comes firmly after humanism in that it is provoked by disruptions to the "human" as a bounded and autonomous being, as well as critiques of a humanist perspective: "it names a historical moment in which the decentering of the human by its imbrication in technical, medical, informatic, and economic networks is increasingly impossible to ignore, a historical development that points towards the necessity of new theoretical paradigms (but also thrusts them on us)" (xv-xvi). Conversely, the posthumanist model of the human can also be said to *pre*figure the specific material-discursive object that has been named "human" by Western humanism. Frequently

⁹ Haraway, as will be discussed later in this chapter, is a prime example of this disavowal.

¹⁰ The concepts represented by "embodied" and "embedded" are common refrains for critical posthumanists. Pramod Nayar, for example, writes that "critical posthumanism does not see the human as the centre of all things: it sees the instantiation of a network of connections, exchanges, linkages and crossings with all forms of life" (5). He therefore defines critical posthumanism as 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). Some care is needed with this method of decentring, though, as characterising the human as a node of being in an interconnected

which "comes *before* that historically specific thing called 'the human' that Foucault's archaeology excavates" (xv [emphasis added]).

Thus, posthumanism offers a sort of "unvented" concept of the human, "unvented" being a term I borrow from Elizabeth Zimmerman. Zimmerman was a mid-twentieth century knitting teacher and designer who did not assume she *in*vented "new" stitches, but instead *un*vented them. In her *Knitter's Almanac*, first published in 1981, she writes,

But unvented—ahh! One un-vents something; one unearths it; one digs it up, one runs it down in whatever recesses of the eternal consciousness it has gone to ground. I very much doubt if anything is really new when one works in the prehistoric medium of wool with needles. The products of science and technology may be new, and some of them quite horrid, but knitting? In knitting there are ancient possibilities; the earth is enriched with the dust of the millions of knitters who have held wool and needles since the beginning of sheep. Seamless sweaters and one-row buttonholes; knitted hems and phoney seams—it is unthinkable that these have, in mankind's history, remained undiscovered and unknitted. One likes to believe there is memory in the fingers; memory undeveloped, but still alive. (75)

Putting aside the period-typical essentialist sense of proto-human knowledge and the implicit privileging of human-made goods over "horrid" industrial production, Zimmerman's description of unvention through "memory in the fingers" is akin to the sort of feeling-thinking found in Haraway.¹¹ To say that critical posthumanists evoke an "unvented" sense of the human, a posthumanism that comes "before" the historically specific "thing" named human, orients attention towards examining the "always already" materially embodied and embedded possibilities that are then shaped or recognised as human (and, correspondingly, as posthuman). Hence, Wolfe writes that he sees the "post"

web of other forms of being can in fact lead to characterising all forms of being by the assumed character of one form. As Colebrook observes, "If the human is assumed to be nothing more than an interface, already at one with a world that is one living system, then posthumanism is... an ultrahumanism precisely because once man is abandoned as a distinct system or inflection he returns to characterize nature or life in general" (*Death of the PostHuman* 163). This inference will be addressed with more specificity in the second half of Chapter 2.

¹¹ For Haraway, thinking means "thinking-with," as will be discussed later in this chapter. She describes a tentacular style of feeling-thinking, building on a sense of "tentacle" that "comes from the Latin *tentaclum*, meaning 'feeler,' and *tentare*, meaning 'to feel' and 'to try" (*Staying with the Trouble* 31).

of posthumanism as "analogous to Jean-François Lyotard's paradoxical rendering of the postmodern" (*What is Posthumanism?* xv).¹² In this simultaneously before-and-after sense of posthumanism, Wolfe refuses the conventional sense of progression from one state to another that is characteristic of humanist teleological narratives of history.

Echoing Lyotard's formulation of postmodernism, "posthumanism" signals both continuity and rupture. Though the prefix of "post-" indicates a succession from one state to another, the compound necessarily repeats that which it purports to supplant. At the same time, the future-state signalled by the "post-" is anticipated by that which it is appended to. Lyotard writes,

the postmodern is always implied in the modern because of the fact that modernity, modern temporality, comprises in itself an impulsion to exceed itself into a state other than itself. And not only to exceed itself in that way, but to revolve itself into a sort of ultimate stability, such for example as is aimed at by the utopian project, but also by the straightforward political project implied in the grand narratives of emancipation. Modernity is constitutionally and ceaselessly pregnant with its postmodernity. (25)

Similarly, the humanist figuration of the human can be said to be "ceaselessly pregnant" with the posthuman, even before anything like the "posthuman" came to be named. Colebrook and Weinstein explain, "'humanism' has always been a way of refusing to see humanity as a biological event within life" (xix). Defined variously as the animal that has an abundance of spirit or soul, that speaks, that is rational, that is emotional, that uses tools, that has no given end or externally imposed function, the human has long been imagined through an appeal to that which surpasses its own human boundaries. Humanism therefore does not just precede and provide the conditions for posthumanism, but "whatever might have passed as humanism has always been a form of posthumanism" (ibid.).

¹² Stefan Herbrechter also makes this comparison in his contribution to the *Posthuman Glossary*, adding that critical posthumanism functions "like an anamnesis and a *rewriting* of the human and humanism (i.e. 'rewriting humanity', in analogy with Lyotard's notion of 'rewriting modernity')" (94). Likewise, in "Theorizing Posthumanism" Neil Badmington writes that he wants to carry Lyotard's insights on the interrelated nature of modernism and postmodernism "to the space of posthumanism," so that "the 'post-' of posthumanism does not (and moreover, cannot) mark or make an absolute break from the legacy of humanism" (21).

POST-HUMAN FIGURES AND TIME

The momentum towards posthumanism that is embedded within humanism is made highly visible in the ambitions of transhumanism, which seeks to transcend the limitations of being human in order to create the post-human. In "Why I Want to be a Posthuman When I Grow Up," transhumanist Nick Bostrom defines the "posthuman" as "a being that has at least one posthuman capacity... a general capacity greatly exceeding the maximum attainable by any current human being without recourse to new technological means" (28). For Bostrom, this "posthuman" signals an idealised perfectible man-a human 2.0 that can be realised by mastering humanity's own evolutionary trajectory through unique intellectual, scientific, and technological abilities. As I wrote in the Introduction, throughout this thesis I refer to speculations like these as "post-human," because they imagine a literal "after" to the human. Consequently, the post-human recursively re-conceives and reifies the human that it is "post-ing" as an ontologically discrete being or species with the exceptional capacity for, and *telos* of, self-transcendence. Transhumanism has therefore been called an "intensification of humanism" (Wolfe What is Posthumanism? xv) and an "ultra-humanis(m)" (Ferrando 28). It is the "popular" posthumanism (Nayar 4; Herbrechter 95; Simon 2) found in SF narratives of technoprogressivist cyborgs and super-humans. An ostensibly liberative ideal, this version of the post-human figures the human as "freed... from the limits of life," "conquer[ing] death, and maybe cognitive and moral deficiency" (Colebrook and Weinstein xi; xiii).¹³ Transhumanism's implicit orientation towards the human (and technology) is exemplified by the opening sequence to the 1970s television series The Six Million Dollar Man. Standing over the protagonist Steve Austin's injured and broken body, a scientist tells his colleagues "We can rebuild him. We have the technology. We can make him better than he was. Better, stronger, faster" ("Population: Zero"). Subjected to radical medical experimentation, Austin goes on to become a hero that uses his newly advanced abilities and cybernetic prosthesis to improve the world for his fellow humans.

¹³ The fantasy I described in the Introduction of this thesis—that my father would somehow be returned to his "normal" state via biomedical intervention—can be considered along similar lines to this desire to free humans from the "limits of life" (Colebrook and Weinstein xi). Though I was not necessarily interested in augmenting my father into a super-human, like many with ill loved ones I was eager to find any way to overcome the perceived frailty of his human body.

Opposing this utopic ideal of the post-human as a (re)built bionic man that harnesses technology to become stronger, better, and faster is the terrifying post-human hybrid of human-machine. Where transhumanism's post-human is a vision of the human unshackled, this variation of the post-human sees the human as an exceptional creature whose fundamental character or being is under threat. The bioconservative backlash to transhumanist ambitions speaks to this style of cultural anxiety, as is illustrated by Francis Fukuyama's Our Posthuman Future: Consequences of the Biotechnology Revolution. He writes of a difficult to define but indisputable "Factor X" that distinguishes humans from animals, a "human essence, the most basic meaning of what it is to be human" (148). This essence, he contends, is put at risk by the use of medicines and technologies that change "natural" behaviours, such as neuropharmacology (92). Like the post-human of transhumanism, this logic further reifies the human. Specifically, the human is here positioned as a discrete being with an essential nature that can be (and often already has been) perverted. In popular culture, this variation of the post-human is frequently constructed as an antagonistic meat-metal monster whose existence marks a breach of the purity of human being. A recent example of this essentialist negative orientation towards the post-human can be found in Upgrade. This 2018 body-horror SF film starts with a similar premise to The Six Million Dollar Man: a man with a broken body is technologically repaired beyond his previous capabilities. Fully paralysed after a mugging, the protagonist Grey Trace is implanted with a microchip that allows him to regain control of his body. The technology has its own agenda, though, and manipulates Trace into embarking on a murderous revenge spree. By the film's end, Trace's body and mind are fully controlled by the programming of the embedded microchip—rather than the microchip allowing Trace to control his body via his mind. Though Upgrade is not necessarily an apocalyptic film in itself, its post-human ending suggests an apocalyptic possibility around the boundary of human/technology. Namely, that current levels of technological infiltration have made the human quite literally a slave to the machine.

The apocalyptic and post-apocalyptic suggestions of texts like *Upgrade* are particularly useful when examining representations of the post/human, as they reveal cultural friction points and signal sources of uncertainty and liminality when it comes to determining the boundaries of what it means to be human—or, what once was prioritised by the human but has potentially been "post-ed." As James Berger writes, the "study of a post-apocalyptic world is a study of symptoms and of representations that partly work through and partly act out the past that haunts them" (xv). Representations such as these trace

cultural trauma, making the lingering anxieties of a specific historic context tangible by turning them into the trigger for the "end" in question. Thus, the 1977 film Damnation Alley reflects concerns about the nuclear and ecological repercussions of an escalating Cold War between the US and Russia, while 2002's 28 Days Later catastrophises the scientific interests of the period by picturing devastating effects of unchecked genetic experimentation, and 2017's Geostorm serves as a warning for the mounting effects of climate change and the unreliability of the technologies that might be used to mitigate these effects. When it comes to considering the post/human, conventional texts in this genre first threaten the end of humanity, then narrativise how humanity might recover itself in order to establish a status quo that is not new, but merely a continuation-and often an intensification-of what came before. Typically, the apocalyptic conditions strip away excess to reveal an enduring human spirit, which allows protagonists to triumph over adversarial conditions. Via the characteristics that endure, the genre highlights that which the cultural logic of humanism values as uniquely human, stabilising what it means to be human in the face of potential disruption. Damnation Alley ends with military protagonists finding an intact suburban settlement and the Earth's axis restabilising,¹⁴ 28 Days Later sees a found family rescued from their recovery in a remote cottage while the infected humanmonster hybrids starve to death, and Geostorm resolves with re-establishing the satellite systems that manage the unstable environment, placing them under the management of an international committee. In each instance, triumphant heroes navigate the ruins of human civilisation and work towards stability, seeking havens where humanity is still (or is soon to be) intact.15

Set in dying and dead worlds, post-apocalyptic texts like these gesture towards a second sense of the post-human: a time that is after humans. At the same time, the resolutions of these three films stall or contain this prospect. Though *Damnation Alley*, 28 *Days Later*, and *Geostorm* are directed towards imagining an end, these films paradoxically

¹⁴ The re-stabilisation is quite literal in this instance. *Damnation Alley*'s apocalypse is wrought by World War III's nuclear detonations knocking the Earth off its axis, creating an unstable ecosystem of massive storms and mutated creatures. No real reason is given for why the Earth returns to its normal axis at the end of the film, but the implication is that societal re-stabilisation will soon follow.

¹⁵ This cultural process, by which attempts are made to contain apocalyptic disruption by restabilising humanist structures (that produced the apocalyptic possibility in the first place), will be further discussed in Chapter 3 in relation to representations of monstrous life and in Chapter 5 in relation to the creation of post-nuclear zones that are toxic *to* life.

narrativise *after*-the-end—a time which, by all rights, should be severed from the human archive. In this narrativisation, they "work through" cultural anxieties that have been amplified to apocalyptic possibility, subduing these anxieties by placing them into a continuous trajectory of human experience. Post-apocalyptic texts thus withdraw from the horizon of human finitude they purport to describe. Despite this retreat, the spectre of a time after humans, or a post-human time, remains. Colebrook and Weinstein observe,

If the posthuman gestured at one time to a world of cyborgs, supermen, and "inorganic" life, that past sense of a life posed beyond life has been countered by a future of a post-Holocene world where the earth as a living system is beginning to fail and instead promises a future inhospitable to all living forms. (xi)

The Anthropocene thesis, a theory that positions humans as a geological force whose impact will linger beyond the moment when humans no longer physically exist (Crutzen and Stoermer), speaks to the prospect of such a post-human future. I will discuss the connotations of the Anthropocene in greater detail in Chapter 5, but I mention it briefly here to highlight why the human, the transhumanist liberative post-human ideal, and the bioconservative dystopic post-human fear, cannot be summarily dismissed as outdated fantasies and anxieties poorly equipped to deal with the volatile world of the posthuman condition. While posthumanists (like other postmodernists) do not hold that there is naturally occurring or universal human behaviour, this does not mean that humans as actual entities have no substance or consequence.

A POSTHUMAN PROBLEM

Reflecting this difficulty, a critical conundrum that underpins any theoretical work investigating posthumanism is that, as Colebrook and Weinstein explain,

The human is both necessary and impossible, for we are at once (historically, culturally, figurally, genetically, structurally) bound to a human finitude that it would be naively "humanist" to deny, and at the same time, every attempt to grasp or annul that humanity repeats the most tired gestures of a mythic human freedom of pure self-creation. The posthuman as a problem, therefore... consists of a series of intersecting impasses that stall questions as they are currently formulated and require a new terrain. (xxiv)

Just as post-human figures solidify the human that is being "post-ed," the post-human connotations of the Anthropocene thesis and of post-apocalyptic worlds demonstrate that being human leaves traces—even while *being human* is made a problem.

At the start of this chapter, I offered a preliminary explanation of posthumanism as the negotiation of disruptions to the human. The idea of a posthuman "problem in the specific Deleuzo-Guattarian sense," as Colebrook and Weinstein write (xxi), along with the reflexive inference of the problematised human, reveals the limitations of this definition. Indeed, it is with reference to the posthuman as a problem that I find my way back to the territory of "decisively, it depends" as an instability which is potentially equipped to navigate paradoxes like the necessary-impossibility of the human. For Deleuze and Guattari, philosophy is the "art of forming, inventing, and fabricating concepts," and they explain that "All concepts are connected to problems without which they would have no meaning and which can themselves only be isolated or understood as their solution emerges" (What is Philosophy? 2; 16). Problems themselves are "disruptions of an actualized field... requir[ing] the redistribution of fields and the creation of a new plane" (Colebrook and Weinstein xxi). Problems provoke new concepts and place old concepts in new contexts to create increasingly complex meanings. Questions, which are composed of concepts, are easily answered only when problems have lost their tension, resolving and cohering into a stable plane of meaning.

To describe posthumanism as a postmodern response to the fracturing and decentring of the human is to view posthumanism as a well-formulated question, with stable concepts that allow post-human figures to be good or bad, progressive or regressive, the utopically transhumanist post-human ideal or the dystopically bioconservativist post-human monster. Posthumanism viewed like this is a philosophy of the sort that Deleuze describes in *Empiricism and Subjectivity* as a "developed question, and nothing else; by itself, and in itself, it is not the resolution to a problem, but the elaboration, *to the very end*, of the necessary implications of a formulated question" (106). This distinction between (humanist) questions and (posthumanist) problems is akin to Wolfe's differentiation between "humanist posthumanism" and "posthumanist posthumanism" (*What is Posthumanist?* 124). As he identifies in *Animal Rites: American Culture, the Discourse of Species, and Posthumanist Theory*, it is possible for animal studies scholars to investigate nonhuman lives in a way that ultimately replicates humanist concerns. For example, granting the nonhuman the status of human does not necessarily undo the logic by which the human is established as distinct from, and superior to, the nonhuman world. Instead, the existing
logic of the human is expanded to incorporate nonhuman beings. In turning their gaze to the animal, these scholars can be considered as engaged in the broadest concerns of posthumanism, namely the decentring of the human. However, a humanist logic of speciesism lingers in this questioning, hence Wolfe's classification of "humanist" posthumanism.

By contrast, Wolfe's "posthumanist" posthumanism can be characterised as an ambition to create new *problems*, though he does not use Deleuzo-Guattarian parlance. He writes that,

the nature of thought itself must change if it is to be posthumanist. What this means is that when we talk about posthumanism, we are not just talking about a thematics of decentering of the human in relation to either evolutionary, ecological, or technological coordinates (though that is where the conversation usually begins and, all too often, ends); rather, I will insist that we are also talking about *how* thinking confronts that thematics, what thought has to become in the face of those challenges. (*What is Posthumanism?* xvi)

A similar ambition is found in Colebrook and Weinstein's articulation of the posthuman problem. They argue that,

we should harness the current state of disturbance of the human in the service of framing new problems. With increased fervour, we must put an end to the attempts to respond to the *questions* of the posthuman and supplant them with the goal of reconfiguring the forces and intensities from which they originated—because these questions require nothing less than the formation of novel problems, not answers. (xxvii)

However, as Wolfe's discussion of humanist animal studies demonstrates, it is very easy to recapitulate the logics of humanism even while seeking to decentre the human. One way to make this a little more difficult, I propose, is to strive for the paradoxical ambivalence of "decisively, it depends." Rather than allowing the posthuman problem to stabilise to the point of providing fixed questions, this form of thought seeks to hold the forces and intensities out of which the human and post/human emerge in relational tension. What must be remembered, though, is that the concept-tools that are used to identify and articulate these "forces and intensities" will themselves shape the contours of the

posthuman problem. It is necessary, therefore, to think critically about and closely with the concepts that are made foundational to posthumanism. One such concept is "autopoiesis."

THE UNDERSTANDINGS OF AUTOPOIESIS

Scholars writing in the post-humanities often draw on the theory of "autopoiesis," "self-making" or "self-reproduction," in order to characterise human (and other) life and being as reciprocally relational and emergent rather than as discrete and essential ontological states. For example, in Posthumanism Pramod Navar writes that this concept and the cybernetic context out of which it derives "dismantled boundaries by arguing that information flowed into and out of the human body or system into the environment" (37), with the result that humans could no longer properly be thought of as wholly separate from their environment. With slightly different emphasis, in What is Posthumanism? Wolfe combines theorisations of autopoiesis and systems theory with Derrida's deconstructive legacy to destabilise categorical differentiation between humans and their others, writing that humans are "always radically other, already in- or ahuman in our very being" (89). Rosi Braidotti, too, privileges this concept, explaining that the vitalist materialism she outlines in The Posthuman is "based on a new concept of 'matter' [that] is both affective and auto-poietic or self-organizing" (158). It is fair to say, then, that autopoiesis has become an organising thought within posthumanism. However, by investigating the origins of this concept it is possible to identify some of the unspoken (humanist) assumptions that can get carried through into autopoietic theorisations of the posthuman.

The term "autopoiesis" was coined by Humberto Maturana and Francisco Varela, biologists and second-order cyberneticians who sought to determine an ontology of the living world by defining life via its organisational properties. In *Autopoiesis and Cognition: The Realization of the Living*, they explain that they are guided by the question: "What is the organization of living systems, what kind of machines are they, and how is their phenomenology, including reproduction and evolution, determined by their unitary organization?" (76). They characterise living systems as autopoietic machines, "selfmaking" physical processes that recursively self-reproduce by "transform[ing] matter into themselves in a manner such that the product of their operation is their own organization" (78; 82). The term autopoiesis refers simultaneously to two aspects of this organisation: 1) the processes of self-reproduction; 2) the structures which determine how a system reproduces itself, or the self-organisation of a system that ensures its continued existence. An example of autopoiesis in action is the organic body's ability to make more of itself via cellular reproduction, elements creating new elements by following internal instructions. DNA and RNA instruct my cells to repair themselves, to form new cells, to produce lipids and proteins, and so on. The meal that I ate for breakfast, the coffee that I drink as I write this, the chocolate that I plan on having as an afternoon snack—these all provide the matter used in this process. However, the instructions on how my body interacts with its environment,¹⁶ how I take in resources, and what happens to those resources when they enter this body come from within the systems of the body itself.

In other words, the means by which a system relates to its environment are regulated by internal structures, not determined by external circumstances. Autopoietic systems are therefore interactionally open but operationally closed. A living system cannot filter information from, or maintain coherence within, its environment without this closure. Recursively, the environment of any system is itself determined by the very condition of that system's operational closure, because it is through this closure that the system selfdistinguishes from its environment. Said differently, when a system distinguishes-its-self it recursively distinguishes its own environment. Operational closure is what gives a system its discrete form, creating boundaries that allow the system to be recognised as a "unity," "that which distinguishes from a background, the sole condition necessary for existence in a given domain" (138). A unity can exist within a larger unity, or a system's environment can be another system: the cells of this body that is drinking coffee and typing these words are components within an autopoietic system, but they are also autopoietic systems in themselves. Key to determining a unity are the mechanisms by which internal cohesion is maintained, the relations between internal elements, and the boundaries that allow a system to define itself. Maturana and Varela write that "What makes [a] system a unity with identity and individuality is that all the relations of production are coordinated in a system describable as an homeostatic system that has its own unitary character as the variable that it maintains constant through the production of its components" (92). Thus, the bodyyours, mine, any living organism's—is an autopoietic unity (comprising other smaller unities) that stays alive by maintaining homeostasis despite environmental challenges. It takes in food for resources to create new cells, burns energy to shiver when it gets too

¹⁶ "My" body has the potential to be a charged term, implying a singularity and ownership that is typical to humanism. With a posthumanist inflection, it might be more precise to say that "I" do not possess "my" body, but rather the processes of "this" body assemble into something that, helplessly, I name "I" in order to communicate with "you" (the assemblage of processes that make up *that* body which is currently reading these words).

cold, and sweats liquid when it needs to cool down. The capacities of these processes to achieve homeostasis indicates the boundaries of each system. The physiological protocols of *this* body that sits here typing (the human-system that I name "I") do not necessarily contribute to the homeostasis of *that* body that lays nearby purring (the cat-system that I name "Luna"), and so each system can be distinguished as a discrete unity.

For the posthumanist, this initial theorisation of autopoiesis offers a way to deprivilege human being. By characterising all life as comprising autopoietic machines, Maturana and Varela strip being of transcendental origins and ground the human in the same material plane as animal being. Though we are discrete unities, both Luna and I are similarly instantiated out of a material network of meaningful couplings, by which our living system-selves determine and process the information of our environments. Furthermore, as highlighted in the Nayar quote above, this theory "dismantled boundaries" by rendering them permeable, as information is here perceived as flowing *through* bodily skin-boundaries (37). Boundaries are also rendered emergent and conditional, because via the processes of autopoiesis boundaries are made in the interaction of system and environment, and so do not exist independently of the conditions from which they derive.

Posthumanism, particularly the sense of posthumanist posthumanism that Wolfe outlines in What is Posthumanism?, is also informed by Niklas Luhmann's (re)theorisation of autopoiesis, which moves the concept beyond its original biological context. Developing a theoretical framework by which to understand the dynamics of meaning, Luhmann is a systems theorist who has deployed autopoiesis as a way to examine the role of difference, and complex differentiation, in the meaning that circulates in psychic (consciousness) and social (communication) systems and in the (re)production of meaning itself. In its most general form, autopoiesis can be understood as a process by which something reproduces its own elements according to internal structures in order to persist. Luhmann's study of the nonbiological systems of consciousness and communication demonstrates that there is no reason that that "something" be organic in composition. Where Maturana and Varela used autopoiesis to argue that living systems are contingent on recursively produced internal structures that are robust enough to survive a potentially overwhelming environment, Luhmann characterises psychic and social systems as autopoietic because they have similarly recursive and self-referential infrastructures that must adapt to their environments. He explains, the "genesis and reproduction of meaning presupposes an infrastructure in reality that constantly changes its states" (Social Systems 63).

In this reworking of the concept of autopoiesis, Luhmann elaborates on "the seemingly paradoxical fact that systems are both open and closed" (Wolfe What is Posthumanism? 111). This added nuance, which unfolds the implications of a system's interactional openness yet operational closure, is perhaps best explained by returning to the processes by which a system self-distinguishes. As has already been acknowledged, a system's environment does not exist independently from the system or unity, because it is in the system's processes of self-distinguishing that an environment is reciprocally determined. However, it is helpful to use a system's environment as a starting orientation for the sake of an anchor point when discussing the mechanisms of autopoiesis. The environment—a world, a background, a context—is complex, "noisy" with information. For a unity to survive this overwhelming stimulus, or for a system to distinguish itself from its environment, mechanisms must be developed to reduce the complexity of this background. Luhmann explains, "the system's inferiority in complexity must be counterbalanced by strategies of selection" (Social Systems 25). Said differently, the system must have the means to filter out only some of all the possible material and stimulus of its background to interact with and take into itself. It does this by establishing self-referential methods of self-organisation that layer together and grow increasingly complex as the environment changes around the system. These environmental changes are in part generated by the system's act(s) of self-establishment, as well as its ongoing mechanisms. Any anomalies or surprises in the environment act as irritants to the system, provoking more finely tuned internal structures that allow a system to survive by maintaining or creating a new homeostatic equilibrium in the face of possible disruption. Yet, these events are irritants only because of the system's expectations, which emerge from "the history of the system" (Risk 383). In other words, it is the system's pre-existing structures that determine the nature of an environmental variance as disruptive or irritation. The more complex an environment is, the more internally complex a corresponding system must become, as "only complexity can reduce complexity" (Social Systems 26). Described crudely, the interactionally open system receives selected input from its environment, processes the input according to its operationally closed internal structures, and converts that input into output. This output means that a complex system recursively further complicates its environment, which in turn forces further complexity from the system. Thus, in the act of autopoiesis, a system must become ever more internally complex as it both responds to and further generates complexity in its own external environment.

Through these recursive mechanisms, the material operations of autopoiesis create worlds unique to each system/environment relation.¹⁷ Due to structural couplings that determine how a system interacts with its environment, the more a system attempts to close itself off from its environment the more environmental contacts it must have, "increas[ing] the system's connection and sensitivity to, and dependence on, the environment" (Wolfe What is Posthumanism? xxiv). As Wolfe explains, the "very thing that separates us from the world *connects* us to the world, and self-referential, autopoietic closure, far from indicating a solipsistic neo-Kantian idealism, actually is generative of openness to the environment" (xxi). Hence, Wolfe's formula of "openness through closure," as the more "closed" to its environment a system is, the more "open" it must also be: the "autopoietic closure of a system-whether social or biological-is precisely what connects it to its environment" (15; 221). For a highly simplified example of this I need look no further than my lap, where the purring system I call Luna has decided to make herself comfortable. She is ignoring the nearby coffee because coffee is a toxic resource for cats, but a glass of cold water would instantly gain her attention. In autopoietic terms, that (lack of) interaction can be understood as the by-product of protocols that differentiate between the various liquids that the purring cat-system encounters in its environment. Though closed off from the resource of coffee, Luna is open to structural couplings that materially embed this autopoietic cat-system firmly in her environment, even if that coupling is one of negation.

The paradox of openness through closure provides posthumanists a way to describe and construct a sense of being that is always incorporative of that which it purports not to be, which is in direct contrast to the oppositional hierarchies traditionally found in humanism. Elaine Graham writes that definitive definitions of human nature rely on an "ontological hygiene" that separates the human from its others via "mutual[ly] purif[ied]" binary pairings (35). Rather than this humanist negation of alterity, the paradigm of

¹⁷ Though I began this discussion with the environment, this is a chicken-egg situation in which neither system nor environment ever really comes first—unless the egg belongs to a different organism altogether, like a dinosaur, in which case the egg came first. What I mean by this somewhat belaboured comparison is that an environment might first be coupled with a different system and then be recoupled with a new system, a process which selectively re-constructs the environment into something slightly different. This is why something like *an* environment can exist in which there are multiple specific and overlapping worlds that "belong" to individual organisms. This distinction is further explored in Chapter 6 in relation to Jakob von Uexküll's work on animal *Umwelten*.

autopoiesis directs one's attention towards the ongoing negotiation of alterity: the structural couplings by which the system-self closes itself off from, but reciprocally embeds itself further within, the alterity of its environment.

When applied to the processes by which meaning is made, as in Luhmann, the concept of autopoiesis also provides a way to undermine the humanist assumption that humans alone can communicate meaningfully. Luhmann goes so far as to say that "Humans cannot communicate; not even their brains can communicate; not even their conscious minds can communicate. Only communications can communicate" (*Theories of Distinction* 169). This is because the elements of meaning-making systems are "not people or groups but communication and 'events'... conceptualised along the lines of Derrida" (Wolfe *What is Posthumanism*? 10). Whatever happens within, to, and because of an autopoietic system can be understood as an event. Simultaneously momentary and repeating, past, present, and future events are (re)produced by a system's structures—structures which themselves are reciprocally created by interacting with events. The "event," conceptualised by Derrida,

is another name for that which, in what arrives, one can neither reduce nor deny (or only, if you prefer, what one cannot deny). It is another name for experience itself, which is always experience of the other.... The "il y a" or the "let there be something rather than nothing" arises perhaps from the experience of the event, rather than from a thinking of being. The coming of the event is what cannot and should not be prevented: it is another name for the future itself. (*Negotiations: Interventions and Interviews* 93-94)

The meaning and experience of any present event is interpenetrated by the non-presence of both past and future: in any "now" we remember the past and anticipate the future.

Thus, whatever "is" is a dense constellation of events that divide under scrutiny into ever more specific events. While events are meaning*ful*, the final meaning of any event is deferred. Caputo explains,

The complexity of events can be seen as a matter of *différance*, in virtue of which there is no such thing as "one" event, a simple, atomic, decontaminated event. Rather, we always have to do with complex webs of events, multilayered tissues of events interwoven with other events, a textuality of events. That means that events belong to still more complex context and that events are always, indefinitely recontextualizable. (94-95) This understanding clarifies how the elements (or events) of an autopoietic system are determined by their relation to other event-elements. Their meaning-and meaning in general—is "not ontically pre-given. Instead, the element is constituted as a unity only by the system that enlists it as an element to use it in relations" (Luhmann Social Systems 21-22). Said differently, event-elements only have status (and so make meaning) when they are incorporated into a system. Therefore, any meaningful event-element implicates its own system of reference. For Luhmann, social systems (communication) are driven by the recursive meaning of such event-elements. It is this that leads him to write that "Humans cannot communicate" (Theories of Distinction 169). Humans simply move through (or, are moved by) social systems that themselves are meaningful, because the constituent event-elements "make requirements on us. They press upon us and force us to ask 'what's happening?" They bring the forces of circumstances to bear upon us and put us into double binds. (Why not triple? Who knows the multiple?) Events demand something of us, here and now" (Caputo 99). Thus, rather than being the product of the exceptional human mind, via the paradigm of autopoiesis meaning is viewed as occurring in the interplay and constitution of any system/environment relation-not in the human (system) alone. Further disturbing the superiority of the human is the inference that, to varying degrees of complexity, all autopoietic systems similarly have and make some form of meaning through the very means of their constitution.¹⁸

WOLFE'S POSTHUMANIST POSTHUMANISM

My looping use of Derrida to explain Luhmann to explain Derrida (with a detour through Caputo) reflects how Wolfe constructs his approach to posthumanism as a recursive hybridisation of deconstruction and systems theory. In *What is Posthumanism?*, Wolfe draws out the resonances between Derrida's and Luhmann's theories in order to articulate a "posthumanist posthumanism," or a posthumanist (rather than humanist) practice of posthumanism as a discipline or academic pursuit (126). This, he writes, "has to do with understanding—and understanding the consequences of—the very redefinition of what humanistic knowledge is after the disciplinary subjectivity at its core, the notion of the human that it 'gives to itself,' has been rewritten" (ibid.). Where in humanism "'the

¹⁸ For a consideration of the potentially humanist implications associated with recognising different autopoietic systems (or life in general) as meaning-making systems with varying degrees of complexity, see Chapter 4.

human' is achieved by escaping or repressing not just its animal origins in nature, the biological, and the evolutionary, but more generally by transcending the bonds of materiality and embodiment altogether" (xv), Wolfe uses the mechanisms of autopoiesis as a framework by which to rewrite the human as an embedded heterogeneous system. This is a posthumanist figuration which "does not destroy the rights, sentience, and finitude of the human but questions the extent to which we grant that humanity to the human species alone" (Colebrook and Weinstein xiv-xv). Wolfe explains,

the perspective I attempt to formulate here—far from surpassing or rejecting the human-actually enables us to describe the human and its characteristic modes of communication, interaction, meaning, social significations, and affective investments with greater specificity once we have removed meaning from the ontologically closed domain of consciousness, reason, reflection, and so on. It forces us to rethink our taken-for-granted modes of human experience, including the normal perceptual modes and affective states of *Homo sapiens* itself, by recontextualizing them in terms of the entire sensorium of other living beings and their own autopoietic ways of "bringing forth a world"-ways that are, since we ourselves are human animals, part of the evolutionary history and behavioural and psychological repertoire of the human itself. But it also insists that we attend to the specificity of the human—its ways of being in the world, its ways of knowing, observing, and describing-by (paradoxically, for humanism) acknowledging that it is fundamentally a prosthetic creature that has coevolved with various forms of technicity and materiality, forms that are radically "not-human" and yet have nevertheless made the human what it is. (What is Posthumanism? xxv)

Attending to the autopoietic and self-referential processes by which systems selfdistinguish from their environments, Wolfe creates a context through which to "read" texts in order to recontextualise their meaning and to scrutinise the means by which specific meaning is made in the first place. As a cultural figuration, the human itself is, here, rendered as one such text to be read (and rewritten) through this posthumanist context.

In this way, Wolfe moves considerations of the posthuman away from objects and towards distinctions, supplanting questions of *what* with the problem of *how*. Rather than using a deconstructive systems theory to describe a new (or revised) ontology, he examines the functional differentiation of system/environment and the meaning that is produced

out of specific structural couplings. The theory of autopoiesis, in the context of Wolfe's posthumanist posthumanism, demonstrates that systems quite literally make world(s), even while they are reciprocally made by the world(s) in which they emerge. In the perspective that Wolfe outlines, interrogating the specificities of the world that is made by humanism as a system of meaning-making—a system which itself forms an environment for more specific systems—leads to a posthumanism that takes "account of the constitutive (*and* constitutively paradoxical) nature of its own distinctions, forms, and procedures—and take[s] account of them in ways that may be distinguished from the reflection and introspection associated with the critical subject of humanism" (122).

Emphasised in Wolfe's posthumanist posthumanism is the previously explained "openness through closure" (15) facet of autopoiesis, which is used to demonstrate that the human's "other" is always embedded within the human via the structural couplings that occur between a system and its environment. Differentiations like human/other, human/nature, life/nonlife, and even system/environment, not only underpin but also *think* the human by generating meaning of and for the human. It is in this deployment of autopoiesis as a paradigm by which to recognise such processes of meaning-making that the strengths of Wolfe's use of both Luhmann's systems theory and Derrida's deconstruction becomes apparent. Wolfe writes of this mixed approach,

the starting point for systems theory is the question of what makes order possible and how highly organized complexity, which is highly improbable, comes into being at all. Deconstruction, on the other hand, begins with taken-for-granted intransigent structures of logocentrism and the metaphysics of presence that are already ensconced in textual and institutional form, and then asks how the subversion of those structures by their own elements can be revealed.

For Derrida, contingency, temporality, the event, "noise," and so on constitute the eruptive and finally irrepressible difference at the heart of any logos or law, a difference whose unavoidability and unmasterability deconstruction aims to bring to light and sustain. (13-14)

Said differently, deconstruction reveals the ways in which meaning-making structures undermine themselves, cracking open the logocentric knowledge systems by which humans are conditioned to think their world as whole. Via *différance*, meaning is shown to be endlessly postponed, deferring the stability promised by the clear binary logic humanism purports. Conversely, via the concept of autopoiesis systems theory models how these cracks and deferrals do not immediately make systems fall to pieces. Because they are autopoietic (self-(re)making), when faced with an environmental irritant these systems are forced towards further complexity in order to restabilise.

By examining practices of differentiation from both of these directions simultaneously, it is possible to examine why and how meaning gets remade in all-toohuman ways, even while "the human" and the humanist practices associated with this figure are placed under destabilising pressure, as with the emergence of posthumanist concerns. In much the same way that "openness through closure" means that any attempt a system makes to close itself off from its environment further embeds it within that environment, the more the human is recognised as a highly contingent mode of being, the more paradoxically present or real the human becomes. This is akin to the "necessary impossibility" of the human that I mentioned earlier in relation to the post-human time suggested by apocalyptic texts. There is something that, for now, humans name human: a material-discursive configuration of forces reified as a certain mode of life or being. Posthumanism-critical or posthumanist-does not deny this. What can be denied, or perhaps forestalled, is the idea of a universal and essential human nature that exists independently of the processes by which this specific mode of being emerges, processes which have been naturalised to justify the way humans are human. In moving towards a posthumanist problem, the focus shifts from the humanist investigation of what the human is to what (and how) the human means, and to what can be done to reconfigure the forces by which such meaning is created. In Wolfe's words, "posthumanism means not the triumphal surpassing or unmasking of something but an increase in the vigilance, responsibility, and humility that accompany living in a world so newly, and differently, inhabited" (47).

Though autopoiesis is a useful tool for demonstrating both humanism's incongruities and for understanding how this meaning-making structure persists despite such incongruities, relying too heavily on this concept alone potentially limits those trying to describe what thought must become in relation to the posthuman problem. Paradoxes like the "necessary impossibility" of the human or the "decisively, it depends" stance that I am pursuing stall thought and contribute to an instability of meaning. While this means that such paradoxes are useful when generating problems rather than questions, it must be noted that autopoietic systems work to occlude paradoxes in order to maintain coherence. By becoming increasingly complex, systems turn paradoxes into blind spots—aporia only visible from the vantage of a second-order observer located with a second system. But this

second system will in turn have its own blind spot. (This is why it is always easier to see someone else's hypocrisy than it is to recognise your own.) Functionally, posthumanism is such a second-order system, looking at the structures of humanism and noticing aporia. At the same time, posthumanism is equally rife with the potential for its own overlooked or occluded inconsistencies. To rethink the habits by which the human thinks itself, staying in and aware of these paradoxes—staying with the trouble, to borrow from Haraway—is crucial. Resolving any paradox simply creates other, more occluded, blind spots. To amplify an oscillating decisively-dependent method of making meaning, care is needed to resist the re-stabilisation of humanist thought patterns. Though autopoiesis is a concept used by posthumanists to trouble the ontological purity of humanism's binaries, it is also a paradigm that directs one's attention towards the stability for which such autopoietic systems strive. *Sym*poiesis may offer a complementary concept by which to think—and so create—posthumanist processes of meaning-making. To articulate the distinction between these -poiesis, I turn now to the sense of posthumanism that can be extracted from Haraway's work.

HARAWAY'S COMPOSTING POSTHUMUSISM

In Staying with the Trouble: Making Kin in the Chthulucene, Haraway responds to current levels of ecological destruction with a turn towards, or recognition of, multispecies symbiosis, writing that "We-all of us on Terra-live in disturbing times, mixed-up times, troubling and turbid times" (1). She identifies two opposing trends in responses to this turbulence, which skew along similar lines to the transhumanist and bioconservative positive-negative split regarding the post-human. At one extreme is a "comic faith in technofixes," a belief that "technology will somehow come to the rescue of its naughty but very clever children" (1; 3). Opposing this is the resigned perspective that "the game is over, it's too late, there's no sense trying to make anything" (3). An option beyond this dialectic, Haraway proposes, is "staying with the trouble," or "learning to be truly present, not as a vanishing pivot point between awful or edenic pasts and apocalyptic or salvific futures, but as mortal creatures entwined in myriad unfinished configurations of places, times, matters, meanings" (1). A key part of this requires surrendering both the imagined superiority of the human and the ontological hygiene out of which notions of a uniquely human nature are naturalised: "Neither One nor the Other, that is who we all are and always have been" (98). Her intent is not to offer a solution to ecological devastation.

Instead, the approach she suggests offers a way of paying attention to, and staying present in, ongoing current complexities.

In the spirit of staying with the trouble of being "neither One nor the Other," Haraway identifies this era—the temporal period of the broad "now" that I earlier identified as composing the posthuman context, in which the human has been quite literally "troubled"—as the "Chthulucene."¹⁹ Seeking an alternative to the anthropocentrism implicit to other labels offered for this period, Haraway's neologism implies that this era is,

made up of ongoing multispecies stories and practices of becoming-with in times that remain at stake, in precarious times, in which the world is not finished and the sky has not fallen—yet. We are at stake to each other. Unlike the dominant dramas of Anthropocene and Capitalocene discourse, human beings are not the only important actors in the Chthulucene, with all other beings able simply to react. The order is reknitted: human beings are with and of the earth, and the biotic and abiotic powers of this earth are the main story. (55)

Rather than narrativizing an epoch that holds the human at its centre, the Chthulucene's tentacular connotations unfurl a posthumanist ecology of knowledge. Doing so attempts to dispense with the idealised figure of the rational thinking man that Enlightenment humanism made its object of study, and which current Western understandings of the

They make and unmake; they are made and unmade. They are who are. (*Staying with the Trouble* 2) Haraway is careful to distinguish her Chthulu from the Lovecraftian "misogynist racial-nightmare monster Cthulu (note spelling difference)" (101). However, in a review of *Staying with the Trouble* for the website *Savage Minds*, the Great Old One Cthulu himself (or rather, Matt Thompson humorously responding as Cthulu might) observes that "Haraway mistakenly believes she has inoculated herself against my minions by adding a superfluous 'h' to Cthulu in order to make her Chthulucene but yet I linger!" Indeed, the added "h" does little to divert a reader's urge to recognise an intertextual allusion to the unspeakable and indescribable tentacled monstrosity of Cthulu, especially considering Haraway's own repetition of tentacular imagery alongside calls to the unseen presences that "we" make-with and become-with.

¹⁹ This name, Haraway explains,

is a compound of two Greek roots (*kthôn* and *kainos*) that together name a kind of timeplace for learning to stay with the trouble of living and dying in response-ability on a damaged earth.... Chthonic ones are beings of the earth, both ancient and up-to-the-minute. I imagine chthonic ones as replete with tentacles, feelers, digits, cords, whiptails, spider legs, and very unruly hair....

human are modelled around. Instead, all beings (humans included) are viewed as "Ontologically heterogeneous partners [that] become who and what they are in relational material-semiotic worlding. Natures, cultures, subjects, and objects do not pre-exist their intertwined worldings" (12).²⁰ Rather than imagining the human via the philosopher who doubts everything to think for himself, or *La Penseur* who sits pondering alone on his pedestal, Harway figures a human that becomes-with, thinks-with, other humans and also non-humans, so that "all our bumptious diversity and category-breaking speciations and knottings" comes together in a "relentlessly contingent SF worlding" (97; 40).

Staying with the Trouble continues a career-long interrogation of the assumed boundaries of the human subject, and it is vibrant with the themes and concerns that Haraway has introduced in previous works. For example, and as was briefly mentioned in the Introduction to this thesis, in her earlier "Cyborg Manifesto" Haraway outlined an "ironic dream" of the cyborg as "a way out of the maze of dualisms in which we have explained our bodies and our tools and ourselves" (291; 316). Cybernetic organisms, she writes, are in fact "not hybrids of all. They are, rather, imploded entities, dense material semiotic 'things" (Staying with the Trouble 104). Her commitment to cyborgs as "a condensed image of both imagination and material reality" ("Cyborg Manifesto" 292) is echoed in Staying with the Trouble's (re)figuration of SF as "real stories that are also speculative fabulations and speculative realisms" (10). Meanwhile, in The Companion Species Manifesto: Dogs, People, and Significant Otherness Haraway moved from the human/machine boundary of the cyborg to the human/dog(animal) distinction. Reflecting on her relationship with her own canine species companion, Ms. Cayenne Pepper, Haraway writes that "to be one is to become with many" (4). By the time of Staying with the Trouble "becoming-with," also sometimes written as "thinking-with," has developed something of a shorthand to indicate the myriad ways that humans-along with "all the other critters of Terra"—"relate, know, think, world, and tell stories through and with other stories, worlds, knowledges, thinkings, yearnings" (97). In Haraway's writing, becoming-with is

²⁰ Note that the posthumanist project I identify within Haraway's work, particularly within *Staying with the Trouble*, should not be viewed as a radical departure from the sense of posthumanism that I have already outlined in this chapter, but as providing an additional nuance. Indeed, the point Haraway makes in this excerpt in particular moves along the same lines as the posthumanist argument that can be made via systems theory and the paradigm of autopoiesis: namely, that event-elements do not exist independently of each other, nor can they be detached from the systems from which their meaning is derived or given.

why hybridity implodes, as hybridity implies the coming-together of multiple discrete parts. Conversely, via "neither One nor the Other" no being exists in isolation, gesturing to both the interlinking material elements that comprise be(com)ing but also to cultural and semiotic workings which themselves need not necessarily originate in *human* worlds, stories, or knowledges.

Consistently working to decentre the human and to unravel humanist dualisms, Haraway's writing has long been fertile grounds for posthumanism. As was mentioned earlier, she has become a "proper name" for researchers in this area (Colebrook and Weinstein xxv). It is quite significant, then, that in *Staying with the Trouble* Haraway writes,

I am unhappy with post-humanism, even as I am nourished by much generative work done under that sign. My partner Rusten Hogness suggested compost instead of posthuman(ism), as well as humusities instead of humanities, and I jumped into that wormy pile. Human as humus has potential, if we could chop and shred human as Homo, the detumescing project of a self-making and planet destroying CEO. (32)

I am sympathetic to Haraway's wariness of the label "posthumanism." The move from the signifier of "man" to "human" and now to "posthuman" reflects that this collective identifier today potentially signifies an expanded and more nuanced demographic. However, because of the recursive nature of any "post," this trajectory carries that core of "man" into any refiguration that is attempted, which is a hindrance to attempts to decentre the human or disrupt the ontological hygiene by which the human has come to be constructed. Acknowledging this limitation, I have continued to use "posthumanism" over the course of this thesis, as it locates this work within a body of like-minded scholarly allies. Even so, it is worth lingering on Haraway's formula of "human as humus," which suggests an approach to posthumanism that diverges from that which is "thought-with" the systems theory paradigm of autopoiesis.

Latin for earth, "humus" is organic matter that has decomposed entirely into a thick dark substance. Humus forms from life's remains: leaf litter, food scraps, roadkill, faeces, that purring cat-system I name Luna, this typing system I name me. All eventually submit to chemical and biological pressures, decaying to become humus. Further life depends on and emerges with the fertile combination of nonliving material, decaying material, and that which is fully decayed, as soil is comprised of minerals, organic matter, water, air, and a small amount of humus, which is rich in nutrients. Compost is not humus—compost still has the potential for further decomposition—but composting does create humus. It is humus' dynamic environment. Autopoietic organisms, like worms and their microorganism friends—bacteria, protozoa, and so on—break down organic matter through digestion and excretion. While I am a neglectful gardener, I keep a compost heap wriggling with worms that I try to help by chopping and shredding organic material (kitchen scraps mainly, but also paper and plant cuttings) into tiny pieces. Freezing is also a useful technique, as it bursts cell walls, and so if I'm feeling particularly generous I will make a smoothie out of frozen vegetable offcuts and pour it over the worms. The smaller the surface area of the organic material, the easier it is for toothless worms and microorganisms to accelerate the decomposition process.

"Human as humus" draws a parallel from these practices of composting to the human as a slowly decaying concept. Framing humanism as a robustly autopoietic system of meaning-making, when the cultural logic by which the human is thought (or selfcreates) faces disruption it responds by becoming more complex and refined, so that the system's self of the human persists while being delineated with more specificity. Conversely, the decay of human to humus can be accelerated by deliberately thinking the human in ways that are *not* autopoietic: by chopping and shredding the human, forcefully rupturing its walls. The humus that results has the potential to create something which is a composite of what once was, fertilising what will come, but only in conjunction with the external elements that it is mixed with. Haraway's use of composting in place of posthumanism, of humus in place of human, underscores that rethinking the human-and rethinking the forces out of which the human is thought-demands something beyond expanding man to human to posthuman, or than acknowledging that previous others are "like us."²¹ Human as humus shifts the collective noun from the singular "man" to the plural "us" (an "us" that does not end at the species of Homo or the qualifier of sapiens), but also foregrounds the role that posthumans-humus must play in ongoing processes of decay and transformation. Notably, though, these processes are not autopoietic, but sympoietic.

²¹ This is a point that Wolfe also makes, particularly in regards to the humanist posthumanist perspective identifiable in some contributions to animal studies. He writes, "Just because we direct our attention to the study of nonhuman animals, and even if we do so with the aim of exposing how they have been misunderstood and exploited, that does not mean that we are not continuing to be humanist—and therefore, by definition, anthropocentric" (*What is Posthumanism?* 99).

In both Haraway's compost posthumusism and Wolfe's posthumanist posthumanism, connections matter.²² Where these approaches differ is in the tools used to conceive of the organisation of the relational means by which matter is made to matter. Drawing on the paradigm encapsulated by the concept of autopoiesis, Wolfe pays close attention to specific ways of "bringing forth a world" (What is Posthumanism? xxv)the recursive means by which humans think (or rather, are thought), and so create both the (their) world and the (their) self. For Haraway, though, "autopoietic systems... are not quite good enough models for the models of the mortal SF world" of the Chthulucene, as thinking-with this conceptual tool can "mislea[d] us down deadly paths" (Staying with the Trouble 31; 33). Namely, while autopoiesis does not dismiss complexity, and in fact offers an explanation for why systems become complex, the paradigm does result in a sense of organised complexity. Within an autopoietic system, unexpected events are turned into logical by-products and conditions of and for the system, making determinisms out of consequences. Additionally, while the concept articulates the self as contingent, always interactionally and differentially constituted of living and nonliving matter so that a systemself always emerges with other autopoietic system-selves, autopoiesis stresses *self*-making. The conditional relations of making-with, becoming-with, are easily obfuscated in this emphasis. "Nothing makes itself; nothing is really autopoietic or self-organizing," Haraway cautions, "Earthlings are never alone" (58). The tidy logic of autopoiesis, or the processes of structural coupling by which a system isolates itself from (and further embeds itself within) its environment, is therefore not particularly helpful to Haraway's troublesome Chthulucene, which "does not close in on itself; it does not round off; its contact zones are ubiquitous and continuously spin out loopy tendrils" (33). Haraway develops the term "sympolesis" as an alternative—or perhaps it would be more accurate to say that she unvented this term. She explains that she learned, later,

about M. Beth Dempster's Master of Environmental Studies thesis written in 1998, in which she suggested the term *sympoiesis* for "collectively-producing systems that do not have self-defined spatial or temporal boundaries. Information and control are distributed among components. The systems are evolutionary and have the potential for surprising change." (ibid.)

²² Said more laboriously, connections (like the structural couplings between system/environment or the differing elements with which becoming-with occurs) matter because they *make* matter, and also because they make matter *matter*.

Thinking with Dempster's work, Haraway enriches her use of sympolesis in *Staying with the Trouble*.

Notably, symposes does not supplant autopoies as a concept by which to understand the organisation of systems. Instead, as Dempster writes in her thesis, sympoiesis "emphasizes the inadequacy of organizational closure and self-defined boundaries for conceptualizing many complex systems" (54-55). She continues, "Neither system is 'better,' or more 'independent,' than the other" (59). Rather, as in Wolfe's use of both systems theory and deconstruction to describe a posthumanist context, these concepts offer different vantage points or conceptual lenses. Or, in Haraway's words, each foregrounds "different aspects of systemic complexity, [and] are in generative friction, or generative enfolding, rather than opposition" (Staying with the Trouble 61). Autopoiesis as a theory is directed towards homeostatic stability, re-production, and the maintenance of relational boundaries. Thinking with autopoiesis as a concept directs the posthumanist's attention along similar lines, towards the means by which these characteristics are achieved. By contrast, sympoietic systems are theorised as being "defined by the factors generating them, rather than by their boundaries. The focus must be on relationships and linkages rather than on components" (Dempster 2). Said differently, the self-making of autopoietic systems is recognised by boundaries (though relations are how those boundaries are formed), while the making-with of sympoietic systems is recognised through relations (though a fuzzy boundary to a sympoietic system can be named). "Standing within a forest," Dempster writes, "I recognize it as a system because I perceive the linkages between different components, not because I separate the system from its background" (115). The composting environment of humus can likewise be recognised as a system of linkages, formed of a teetering balance of relations between aerobic and anaerobic processes that are continuously impacted by ongoing changes in acidity, moisture, aeration, and so on. Characterising the compost heap via symposesis directs attention towards the tensions of these balancing and competing relations rather than towards the relational boundaries that separate this system from its environment. As an organisational concept, sympoiesis is a poiesis (a making and so doing) of cooperative volatility rather than self-recursivity. Without autopoiesis' emphasis on the processes of self-remaking, worlding via sympoiesis implies a thick contingency of relationships, linkages, and forces that spiral unbounded into unpredictable specificity.

Again, the recognitions, or re-cognitions, of sympolesis do not supplant those of autopolesis. Rather, they move one in a different direction, providing an orientation that is useful for developing posthumanism as a problem. To think the posthuman in ways that are unanticipated by humanism, or in ways that do not merely revise or refine old patterns, posthumanists need a means to think surprise—a surprising way of thinking. Re-thinking via the "cooperative, amorphous qualities" of sympoiesis (Dempster 28) holds patterns of thought, such as the ways that humans think themselves, in a state of constant tension. Dempster explains that with sympoiesis, "We must not think: Equilibrium. We must think: Balancing?" (39). *Is* there balance? In what context, according to what metrics? What forces are at work to maintain this balance, and what benefits from it?

Thinking the posthuman via sympolesis, pursuing a sympoletic system of meaningmaking that is loose and open to surprising changes, I am captivated by this interrogative "?". The posthuman? Decisively, I say, "it depends." To narrow the scope of reciprocal dependencies that one might examine,²³ this thesis revolves around paying attention to the means by which post/humans pay attention to different modes of life,²⁴ interrogating the ways in which understandings of life and of life's various others shape what it means to be human, even while the ways in which what it means to be human shape what humans think of life and its reciprocal negation of nonlife.

²³ Returning to my characterisation of humanism as an autopoietic system, "reciprocal dependency" might describe the structural couplings that the human depends upon to delineate itself from a world that is, simultaneously, dependently determined as other by those same couplings. While "life" is far from the only dependency that can be identified, it is a central concept in the ontology of the human, as will be addressed in the next chapter.

²⁴ I construct this statement with a recursiveness that mimics Haraway's discussion of the study of SF: "It matters what matters we use to think other matters with; it matters what stories we tell to tell other stories with; it matters what knots knot knots, what thoughts think thoughts, what descriptions describe descriptions, what ties tie ties. It matters what stories make worlds, what worlds make stories" (*Staying with the Trouble* 12). Likewise, to be aware of the processes by which attention is directed and formed, it matters how attention is paid to how we pay attention.

2

THE POLITICS OF LIFE

HOW LIVING MATTER COMES TO MATTER

A question like "What is the meaning of life?" typically provokes a grand philosophical reflection on the nature and purpose of existence. In this thesis, though, I am more interested in the literal sense of this question: what *meaning* does "life" have? What concepts inform this meaning, and what larger meaning-making systems are those concept-tools implicated in? Wikipedia's entry on "Life" serves as a useful entry point to this exploration because, as it is nominally an encyclopedia driven by public as much as expert input, the resource typically provides common-sense definitions that are indicative of the status quo, while edits to individual entries can reveal dominant cultural logic at work. Published in November 2001, the first version of the Wikipedia entry on "Life" reads,

Life has no simple definition. Apart from countless religious definitions and explanations, something is usually defined to be alive if it matches the following conditions, at least once during its existence:

- Growth
- Metabolism, the uptake of food, conversion of food into energy, and disposal of waste products
- Motion, either moving itself, or having internal motion
- Reproduction, the ability to create more-or-less exact copies of itself

• Stimulus response, the ability to measure properties of its surrounding environment, and act on certain conditions

As all [sic] other known definitions of life, this is inadequate. According to this definition,

- fire is alive
- viruses are not

In total, this entry measures 1,316 bytes of information and has 192 words. By contrast, the November 2020 version of this entry measures 151,331 bytes and has over 7,000 words. It is now split into multiple subsections, giving the reader various disciplinary definitions and hypotheses, histories of the study of life, an explanation of why it is difficult to determine the origin of life, a consideration of life in different environmental conditions, a discussion of death as the cessation of life, and more.

Overall, this 2020 version of the entry offers a more nuanced definition of life, but the basic starting point remains the same. The entry begins with the broad statement that,

Life is a characteristic that distinguishes physical entities that have biological processes, such as signalling and self-sustaining processes, from those that do not, either because such functions have ceased (they have died), or because they never had such functions and are classified as inanimate. Various forms of life exist, such as plants, animals, fungi, protists, archaea, and bacteria. Biology is the science concerned with the study of life.

There is currently no consensus regarding the definition of life. One popular definition is that organisms are open systems that maintain homeostasis, are composed of cells, have a life cycle, undergo metabolism, can grow, adapt to their environment, respond to stimuli, reproduce and evolve. Other definitions sometimes include non-cellular life forms such as viruses and viroids.

From these versions of Wikipedia's entry on "Life," it quickly becomes clear that while the vital question—the question of vitality itself—has no easy answer, there is an assumption that "life is." Namely, it is assumed to be an ontological state, the characteristics of which can be used to distinguish animate from inanimate entities. Even though there is uncertainty over the specifics of this distinction, the challenge is not to decide whether living and nonliving things *are* different. Rather, the challenge is to determine the specifics of how this difference is marked. The difficulty that viruses, fire, and synthetic life present

to defining life's boundaries suggests that there is a cultural logic hard at work here, one which "struggle[s] to maintain a difference that makes a difference between all forms of Life and the category of Nonlife" (Povinelli *Geontologies* 14). A clue to what this cultural logic may be driven by can be found in life's listed capacities: birth, growth, homeostasis, reproduction, response to stimulus, and death. These capacities are found in the form of life that the human is most easily able to recognise as living: its own.

Drawing on the language introduced in the previous chapter, humanism can be viewed as an autopoietic system whose system-self names itself "human." A key eventelement in this meaning-making is the concept of "life," and the processes and materials of life—or rather, what is understood of these within humanist biological discourse interlinks with the means by which the specifically human mode of life is produced and recognised as human. To better identify this recursive process in action, in this chapter I draw on the conceptual tools offered by theorisations of biopolitics, namely the specific politicisation of life that Michel Foucault identifies as operating within Western modern states. I then consider whether a different approach to politicising life, such as Rosi Braidotti's vitalist materialism, might be used to produce a sense of the human distinct from that which is found at the centre of humanism's biopolitics. However, while pursuing the posthuman as a sympoietic problem, a simple substitution of what the category and event-element of "life" means may not be enough. Rather, as will be addressed in Part 3 of this thesis, what may be needed is a different orientation towards how both living and nonliving matter are made to matter. First, though, it is necessary to pay close attention to how the matter of life is made meaningful within the critical agendas set by biopolitics, vitalist materialism, and posthumanism in general.

I should emphasise that when discussing life, my goal in this chapter is not to arrive at an ontological determining of what life *is* (or is not). Nor am I referring to life *itself* over the course of this thesis. Instead, my focus is on the way that the meaning of the "human" and a certain sense of "life" depend upon each other, so that "life" can be viewed as a naturalised category that recursively frames and is framed by the ways that humans think themselves as such. In other words, is this chapter about life? Decisively, it depends.

BIOPOLITICS AND THE POLITICISATION OF BIOLOGY

Wikipedia curators monitoring the entry on "Life" would likely not be particularly impressed if I were to make a small addendum to their definition: Biology—the study of life—(re)creates life. Biologists—those who study life—do this not through mad experiments with genetic material, but through the actual *study of life*, which produces life as its object of study. While ontological questions of life can be identified throughout history, the answers to these questions cannot be equated to the model of life as it is now understood through contemporary biological discourses. Foucault explains:

Historians want to write histories of biology in the eighteenth century; but they do not realise that biology did not exist then, and that the pattern of knowledge that has been familiar to us for a hundred and fifty years is not valid for a previous period. And that, if biology is unknown, there was a very simple reason for it: that life itself did not exist. All that existed was living beings, which were viewed through a grid of knowledge constituted by *natural history*. (*The Order of Things* 127-128)

For Foucault, knowledge is coextensive with power. This is aptly demonstrated by his formula of power/knowledge, a combination of "the deployment of force and the establishment of truth" (*Discipline and Punish* 184). Knowledge is always implicit to the agenda of the power under which that knowledge is formed; it is "the grammar of power, a set of rules and procedures by which some things are valued and legitimated over others, and some things privileged and others exiled" (Graham 42). The biological discourse that produces "life itself" as it is now understood can therefore be understood as a specific technology of power/knowledge, one which Foucault coins "biopower" or "biopolitics."

In a 1976 lecture series given at the Collège de France in Paris, Foucault described biopower as "power's hold over life. What I mean is the acquisition of power over man insofar as man is a living being, that the biological came under State control, that there was at least a certain tendency that leads to what might be termed State control of the biological" (*"Society Must be Defended"* 239-240). Biopower is, in the view Foucault outlines in this lecture series, the modern state's main mode of power,²⁵ and is enacted via the state's "right to make live and let die" (241). This is in contrast to the pre-modern form of sovereign power, which was codified in such a way that rulers had "the right to take life or

²⁵ In *Discipline and Punish* Foucault initially characterised the modern state's power as operating in a disciplinary mode, a technology of power that works via individualising mechanisms. Working on a broader scale, biopower does not replace disciplinary power but makes use of it "by sort of infiltrating it, embedding itself in existing disciplinary techniques" (*"Society Must be Defended"* 242). Following Foucault's theorisation of biopower, disciplinary power is positioned as an intermediary step between pre-modern sovereign power and biopower that emerged with the developing systems of governance, knowledge, and technologies of modernity.

let live" (ibid.). The object of power is subject to sovereign power when killed—often via gruesome public spectacle, as Foucault recounts in the opening of *Discipline and Punish*. Conversely, the object of power organised via biological discourse is subject to (and subjectified by) biopower *until* death.

Under the auspices of sovereign power and biopower, the biological events of death and life are political outcomes. The modern state exercises biopower to keep its citizens alive via processes that are aimed towards improving their biological characteristics, such as those identified earlier: birth, growth, homeostasis, reproduction, response to stimulus, and death. This translates to categorising, monitoring, and seeking to control populationwide statistics like "the birth rate, the mortality rate, [and] longevity" (*"Society Must be Defended"* 243). Biopolitics—the state's usage of this power over life—therefore creates the boundaries of its own collective population, because only some people will be subjected to, and so made subject by, a state's sphere of influence. Even so, because biopolitics is "directed not at man-as-body but at man-as-species," it has a "massifying" effect (ibid.). Biopower can thus be understood as determining which living beings count as "man-asspecies," so that human nature is thought, practised, and recognised via biopolitical means.

In addition to identifying a significant shift in the way that the modern state's power operates, Foucault's theorisation of biopower and of life's centrality to modern politics initiated a turn in the critical and philosophical thinking that would follow him. By drawing attention to the discourse by which life is politicised, Foucault prompted further interrogations of how various forms of life are encountered and produced. Roberto Esposito writes that the term "opened a completely new phase in contemporary thought... the entire frame of political philosophy emerged as profoundly modified" (*Bios* 13). Foucault's initial theorisation of biopower has since been exhaustively refuted and refined, spawning countless new tendrils and applications of this theory.²⁶ As Elizabeth Povinelli wryly observes, "Biopower, biopolitics, thanatopolitics, necropolitics, positive and negative forms of biopower; Foucault, Agamben, Negri, Esposito, Rose, Mbembe, Connolly; Anthropology, cultural and literary studies, political theory, critical philosophy, history; Foucault's understanding of biopower has gone viral" ("The Three Figures of

²⁶ Perhaps it is somewhat ironic, then, that Foucault himself moved on from the language of biopower and biopolitics very quickly. In his 1978 lecture series, *The Birth of Biopolitics*, Foucault resituated these terms within a broader concept of governmentality: the various means by which the state controls its populace. For a discussion of this shift, see Vernon Cisney and Nicolae Morar's introduction to *Biopower: Foucault and Beyond*.

Geontology" 51). Posthumanists are similarly infected by a concern with biopower, often looking beyond Foucault's initial focus to decentre the human. In particular, animal, and increasingly vegetal, studies scholars have considered how nonhuman lives are elided in a humanist biopolitical regime.²⁷

For my purposes of moving towards the posthuman to come, or towards posthumanism as a problem, the concepts of biopower and biopolitics make visible the tactics used to naturalise the interrelated categories of "life" and "human." Namely, modern governments seeking to manage their populations do so by working on the material of human life itself, an act which reflexively determines what life is in the first place and makes the recognised capacities of life central to how the human is subjectified. Returning again to the framework introduced in Chapter 1, "life" can be considered an event-element in the autopoietic system of humanism, one which generates an image of biological normalcy for humans that goes beyond national borders. In order to further consider the meaning of life (or, how life is made meaningful), and its reciprocal role in the construction and maintenance of the human, I would like to draw attention to three responses to Foucault's theorisation: Giorgio Agamben's discussion of the Homo sacer; Achilles Mbembe's necropower; and Povinelli's geontopolitics or geontopower. Each can be considered as identifying different analytical inflections of biopolitical theory, or as offering distinct figures and concept-tools by which to address the interlinking of the human and life.

Though Foucault sees the administration of life as being a function of modern power, in *Homo Sacer: Sovereign Power and Bare Life* Agamben argues that the governance of life predates modern power because it has always been at the core of sovereign power.

²⁷ This should not imply that all animal and vegetal studies scholars perform solely biopolitical analyses. Derrida's deconstruction of animality and the vitalist traditions of Deleuze and Guattari are equally influential. Regardless of the framework that is used, though, it is clear that "life" has become an avenue through which to consider different modes of being. A noncomprehensive list of recent works in this area that engage with biopower includes Nicole Shukin's *Animal Capital: Rendering Life in Biopolitical Times*, Colleen Glenney Boggs' *Animalia Americana: Animal Representations and Biopolitical Subjectivity*, Jay Johnston and Fiona Probyn-Rapsey's *Animal Death*, Dinesh Wadiwel's *The War Against Animals*, Jeffrey Nealon's *Plant Theory: Biopower and Vegetable Life*, Matthew Chrulew and Wadiwel's *Foucault and Animals*, Kristen Asdal et al.'s *Humans, Animals, and Biopolitics: The More-Than-Human Condition*, Lesley Head et al.'s *Vegetal Politics: Belonging, Practices and Places*, and Giuseppe Coco and Bruno Cava's *New Neoliberalism and the Other: Biopower, Anthropophagy, and Living Money*.

Referring to historical instances in which humanity has been withheld from humans, Agamben's focus is on the sort of human subjects that are produced (and denied) by the interpenetration of life and politics. He writes,

In the "politicization" of bare life... the humanity of living man is decided.... The fundamental categorical pair of Western politics is not that of friend/enemy but that of bare life/political existence, $zo\bar{e}/bios$, exclusion/inclusion. There is politics because man is the living being who, in language, separates and opposes himself to his own bare life and, at the same time, maintains himself in relation to that bare life in an inclusive exclusion. (12)

While Agamben differentiates "bare life" $(zoe)^{28}$ from political existence (*bios*) by drawing on Greek traditions, his interpretation of *zoe* deviates from the original Greek formulation. Claire Blencowe explains that in Antiquity *zoe* referred to the means of one's survival, which "were excluded from the domain of politics—the *polis*. The concerns of *zoe* were to be dealt with in the privacy and despotism of the home—the *oikis*. 'Man' was for Aristotle a living animal with the *additional*, strictly separate, capacity for political existence" (115). *Zoe* thus referred to the biological facts of life, which were excluded from the *polis* because they were assumed to be already assured. Agamben, however, characterises *zoe*'s exclusion from the political sphere as meaning that this facet of life is in fact intrinsically politicised. Specifically, Agamben's sense of *zoe* is a politically produced struggle for survival that is exemplified via reference to a figure from Roman law: the *Homo sacer*. This label of "sacred man"²⁹ was applied to those who transgressed against the law of community and were expelled from society. While still functionally alive, the *Homo sacer* was without rights,

²⁸ Agamben writes this word as *zoē* while Braidotti writes *zoe*. I have followed the formatting of the source material where appropriate, and to distinguish between the different senses of life captured by these two iterations.

²⁹ "Sacred" has historically had something of an ambiguous definition. Leland de la Durantaye explains that its meaning varies "from that which is treasured and most pure and precious to that which is most contemptible and must be cast out of the community so as to preserve it from contamination" (206). Once exiled, the *Homo sacer* could be killed without punishment, but that death could not be applied towards sacrificial ends. Unsuitable for sacrament, the "sacred" life of the *Homo sacer* falls into the category of being excluded in order to preserve the community: "he has been declared unclean, his rights have been rendered forfeit, and his status as a member of the group has effectively been suspended" (207).

unrecognised by the state, and even in death was wholly without value. Agamben's variation of *zoē* as "bare life" refers to that which is *left of life* after the political worthiness of personhood has been stripped away by the state. *Zoē* is therefore not a natural state of life and does not exist pre-ontologically. Instead, *zoē* is a mode of life that has been bared by the *polis*, a reduction made and made visible via the legislative processes and political apparatuses that reposition the human as creature.³⁰

Created by judicial processes only to be excluded from the laws of the state, the exception of the *Homo sacer* marks a boundary between in- and out-side. Despite being excluded from the *polis, zoē* as bare(d) life is highly politicised precisely because it is framed as being "outside" politics, and so must be paradoxically accounted for by the system that refuses it. As Agamben writes, "what is excluded in the exception maintains itself in relation to the rule in the form of the rule's suspension" (*Homo Sacer* 18). A parallel can be drawn between this state of exception and the structural couplings of autopoiesis discussed in Chapter 1 that result in what Wolfe describes as "openness through closure" (*What is Posthumanism?* 15). In both, that which is "outside" must be accounted for by the frameworks that constitute the "inside," meaning that that which is other(ed) is always reciprocally internally incorporated. Hence, Agamben's statement above that "man is the living being who, in language, separates and opposes himself to his own bare life and, at the same time, maintains himself in relation to that bare life in an inclusive exclusion"

The "creature" of Agamben's conceptual opposition is thus another name for *life*—but not just any life. It is another name for *bare life*, so it seems that we have merely replaced one enigmatic term with another. Confronted by such a curious phrase—a bare life that is another name for *the human creature*—Agamben's English translators reduced the strangeness of this formulation, rendering "the human creature" as "the human *being*" (MWE, 20 [24]). By designating *the human creature* as another name for *bare life*, we rectify a mistranslation and enlarge the field of reference… reach[ing] the central figure of *Homo Sacer* and the works that follow: *bare life*. (201-202)

³⁰ In this interpretation I am following de la Durantaye's reading of Agamben. He argues that a translation error has created confusion around Agamben's concept of bare life. Referring to an essay examining human rights that Agamben wrote in the years before *Homo Sacer*, de la Durantaye writes that Agamben,

invokes a "bare life [*la nuda vita*]" that the codification of inalienable human rights was meant to protect. Immediately thereafter he gives, in the space of a parenthesis, a gloss of what he means by this "bare life." The parenthetical gloss is as revealing as it is brief: "bare life [*la nuda vita*] (the human creature [*la creatura umana*])" (MWE, 20 [24], translation modified).

(*Homo Sacer* 12). Establishing a state of exception like the bare(d) life of the *Homo sacer* means that Roman legislature reflexively and implicitly must also account for what the proper mode of human life must be: "the humanity of living man" (ibid). The *zoē/bios* split similarly infers this reflexive division, opposing the capacities of life considered universal to living beings to a mode of life that is proper to the being of humans. In this fashion, Agamben's variation to biopolitical theory draws further into view that the political recognition and validation of some modes of life over others produces the human subject as an exclusive form of living being.

The implications of such differentiation are made evident in Mbembe's theorisation of "necropower," which addresses the modern state's use of power to make death on a large scale. Working in the field of postcolonial studies, Mbembe asks if "the notion of biopower [is] sufficient to account for the contemporary ways in which the political, under the guise of war, of resistance, or of the fight against terror, makes murder of the enemy its primary and absolute objective" (12). The wars fought under the guise of pre-modern sovereign power do not seem to sufficiently encompass current styles and scales of war, where violence by one group of people against another is culturally legitimised and borne out by a sophisticated interplay of political and technological tactics, and which are fought in the name of an entire people rather than in the name of an individual ruler. Additionally, these wars seem, at least on the surface, somewhat antithetical to a regime of biopower tasked with the administration of life. On the one hand, state-sanctioned acts of killing such as these can be framed as the underbelly of the biopolitical rationale of government, a legitimised logical extension of protecting and maintaining a governed population. War is waged for the sake of this biopolitically favoured population. Or, as Foucault writes, "this formidable power of death... now presents itself as the counterpart of a power that exerts a positive influence on life.... It is as managers of life and survival, of bodies and the race, that so many regimes have been able to wage so many wars, causing so many men to be killed" (History of Sexuality 137).

In Mbembe's view, though, this characterisation of war does not adequately capture the way in which those who are excluded from a biopolitical regime are not just made (bio)politically irrelevant, but are exposed to death and often actively made the focus of an amplification of the sovereign right to kill: "*the right to wage war* (the taking of life)" (23). His neologism of necropower thus refers explicitly to power over and through death, as well as to the subjugation of "life to the power of death" (39). This is in contrast to biopower's subjugation of life to politics, which creates a sense of biological normalcy and binds a massified population group together. Necropower similarly operates on the scale of populations and species, however it is geared towards making that massified life killable, operating by demarcating killable others, legitimising acts of death-making, and in some cases also producing life for killing. When working on human lives, this power is most easily seen in instances like the Holocaust death camps, colonies, the plantation system, and the frontier: spaces which are not just excluded from biopower's gaze but where an othered population is rendered not-quite-human so that they may be actively targeted for death.

Mbembe's necropolitical theory can therefore be read as identifying the means by which biopower operates in a non-Western (non-humanist) environment. Alternatively, it can be understood as the colonial form that biopower takes when used to exert control in a new social geography, or in a "zone where the violence of the state is deemed to operate in the service of 'civilization'" (24), with the implicit understanding that the tenets of humanism equate to this "civilisation." At the threshold of the frontier imagined between civilised and uncivilised worlds, necropower positions the life of the other as "savage" (ibid.). Mbembe writes,

In the eyes of the conquerer, *savage life* is just another form of *animal life*, a horrifying experience, something alien beyond imagination or comprehension. In fact, according to Arendt, what makes the savages different from other beings is less the color of their skin than the fear that they behave like a part of nature, that they treat nature as their master. Nature thus remains, in all its majesty, an overwhelming reality compared to which they appear to be phantoms, unreal and ghostlike. The savages are, as it were, "natural" human beings who lack the specifically human character, the specifically human reality, "so that when European men massacred them they somehow were not aware that they had committed murder." (ibid.)

If humans and the material of human life are the focus of the positive pressure of biopower, animal life and the life of those who have been framed as savage, and so animal-like, comprise the objects of the negative pressure of necropower. Settlers do not view colonial spaces as zones of outright war or murder because violence of this sort can only be done against others who share a similar ontological status to the one who is acting. In an examination of grievable lives, Judith Butler suggests that "specific lives cannot be apprehended as injured or lost if they are not first apprehended as living" (*Frames of War* 1). Similarly, the savage life found by colonisers on the other side of the frontier is deemed to

lack a "specifically human character," and so is rendered nonmeaningful, nonalive, when compared to the human and to human life. Following this same logic, abattoirs (and the agricultural practices that farm animals for slaughter) are not traditionally seen as murderous because only humans are recognised as having the form of life that is murderable.

Via Foucault, Agamben, and Mbembe, it is increasingly clear that the "life" that power works on and through is not rendered homogenous. Instead, life is riddled with caesura that, in part, are used to distinguish being biologically *alive* from *living* meaningfully. As is captured by Agamben's deployment of zoe, though only one side of this binary is traditionally afforded political status, both of these senses of life are equally politicised. The capacity for meaningful life is judged against the regularised and idealised biopolitical subject, so that the human becomes the standard against which expressions of living being in general are determined. For this reason, Povinelli characterises Western ontologies such as humanism as "covert biontologies," measuring "all forms of existence by the quality of one form of existence" (Geontologies 50). Nonmeaningful forms of life (savage life, to echo Mbembe, but also animals and plants) are viewed as nonhuman (or in the case of savage humans, not fully human), or as lacking vital characteristics. This lack disqualifies these forms of life from biopolitical protections and enhancement at the hands of the state and exposes them, instead, to necropolitical subjugation. Because these lives are not meaningfully alive, they are, in a sense, not actually living at all. This inference suggests that a differentiation precedes and informs the stratification of meaningful (human) life and nonmeaningful (nonhuman) life: the binary of life/nonlife. In Geontologies: A Requiem for Late Liberalism, Povinelli identifies this binary as providing a conceptual framework that subtends the use of biopower, writing that "a common but once unmarked ontological assertion, namely, that there is a distinction between Life and Nonlife that makes a difference" is "fundamental to but hidden by the concept of biopower" (8; 4). Despite the common-sense understanding expressed on Wikipedia that life is, and that living is an ontological state whose boundaries just needs to be better understood, "life" is not a neutral category. Much like "human," this is a label that must be first attributed to specific material formations, assemblages, entanglements, or autopoietic systems. Conversely, "life" is denied to material arrangements which are seen as lacking vital characteristics like birth, growth, death, as well as specific "human" characteristics like autonomy, consciousness, will, potentiality, and more.

This suggests that within the modern state's use of biopower, and within the ontological hygiene of humanism, the lively potential of life-and of human life in its idealised form—is ultimately constructed against the inertness of nonlife. The cultural logic by which forms of life are typically stratified and compared to nonlife is well summarised by Martin Heidegger's now famous three theses: "[1.] The stone is worldless; [2.] The animal is poor in the world; [3.] Man is world forming" (World, Finitude, Solitude 184). The "world" or Umwelt Heidegger refers to is not just the physical surroundings of beings, but the ability that beings have to make sense of, or have concern for, their surrounds.³¹ The distinct mode of life and being of humans, which Heidegger terms Dasein, involves a unique capability to world its own world through metaphysical reflection. Animals, by Heidegger's logic, are led by a mechanistic drive to survive and procreate. They are unable to change the trajectory of their own lives or environments. While an animal may be aware of its environment, it does not comprehend its environment to be an environment: a lizard does not relate to the stone it sits on as a stone; the cat purring nearby as I type this does not relate to this keyboard as a keyboard. Finally, stones, and other nonliving elements, have no awareness at all but are "essentially without access" (197) to the world. They thus have no world of their own, but are merely objects that persist through time. The abyss that separates the being of animals from the being of humans within Heidegger's formula reflects the "biontological" closure that Povinelli identifies within Western ontologies. Animal forms of existence are here measured against human consciousness, and animal life is rendered less meaningful (because it is less filled with meaning) in the comparison. Stones, which do not grow, breathe, or maintain homeostasis, and which cannot die but are merely destroyed, are rendered humanity's double other: the still, silent, and above all lifeless counterpart of nonmeaningful life. A hierarchy which measures the nonhuman against the human and finds the human superior is not only anthropocentric,³² it is also

³¹ I will return to Heidegger's theses, *Umwelt*, and the presumed worldlessness of stones in Part 3. ³² It should be acknowledged that Heidegger sought to address the anthropocentrism of metaphysics of his day, writing that modern thinking "is defined by the fact that man becomes the measure and the centre of beings. Man is what lives at the bottom of all beings; that is, in modern terms, at the bottom for objectification and representability" (*Nietzsche: Volumes 3 and 4* 28). He did not wish to immediately place the being of animals and humans in a hierarchy, but instead determined that both animals and humans share between them the fact of being beings. Despite this aim, he has been criticised for not going far enough in his analysis. For example, Jacques Derrida writes that in Heidegger "man, and the name of man are not displaced. And they certainly do not disappear. There is, rather, a sort of re-

zoo-centric or life-centric. In Povinelli's view, this centrism inflects geontopolitics, and so the biopolitical systems of governance that geontopolitics enfolds.

This combined anthropocentrism and *zoo*centrism can be seen to inform the means by which humans reflexively understand themselves and their others, as well as how humans relate with that which is perceived as less-than-human, nonhuman, and nonliving. Within humanism's biopolitical parameters, nonlife opposes life as the inert, barren, and empty. Lacking any intrinsic meaning in itself, a nonliving object is made useful or meaningful through human industry. When living arrangements of matter are framed as less meaningfully alive than humans, they are pushed down a hierarchy of living/nonliving that slides from fully human to a state of necropolitical abjecification to nonliving objectification. Thinking with the framework of geontopolitics that Povinelli describes, it becomes evident that the stability of humanism as a biopolitical system relies on, and perpetuates, this differentiation of (human/nonhuman)life/nonlife,³³ to the point that the act of recognising the significance of this division has been incorporated into the calculation of whether someone can be identified as human in the first place.

The presence of geontopower in Australia during colonisation aptly demonstrates this last nuance. Colonisers brought with them biopolitical forms of governance that not only delegitimised existing knowledge structures but also afforded opportunities for further subjugating the "savage" lives that were encountered. Povinelli writes, "The attribution of an *inability* of various colonized people to differentiate the kinds of things that have agency, subjectivity, and intentionality of the sort that emerges with life has been grounds of casting them into a premodern mentality" (*Geontologies* 5). The Dreaming epistemology of Australian indigenous peoples does not differentiate between life and nonlife in the same way that Western humanism does, and "settler liberalism could easily contain such a belief in the brackets of the impossible if not absurd" (2). In a colonial space like this, the orientation the colonised have towards nonlife gets folded into the complex determining of whether one can be counted as fully human. If someone is not "able" to recognise the "proper" relations between life and nonlife, between potential subjects and definite objects, then that person is not fully rational according to a

evaluation of revalorization of the essence and the dignity of man" ("The Ends of Man" 49-50). By approaching animals through a metaphysical lens of lack, Heidegger's three theses scaffold being against the exclusive position of world-forming, which is available to *Dasein* alone.

³³ Or, as Povinelli writes in relation to the crumbling distinctions of geontopolitics, "This is the formula that is now unravelling: Life (Life {birth, growth, reproduction} v. Death) v. Nonlife" (*Geontologies* 9).

Eurocentric sense of reason, and so is not deserving the complete rights and responsibilities that come with being considered fully human.

By situating biopolitics within the larger conceptual framework of geontopolitics, Povinelli's variation to biopolitical theory highlights how the humanist logics that are tangled up with the biopolitical administration of life rely on and produce a stable division of, a relationship between, and an orientation towards, the binary pair of life/nonlife. However, the stability of this dualism is becoming increasingly troubled, due in large part to the many destabilising forces that have already been identified as contributing to what can be broadly identified as the posthuman condition. Existing biopolitical forms of governance must now respond to pressures applied by critical theory seeking to shred the ontological hygiene of humanism. Relevant, too, is the post-human world imagined in the Anthropocene thesis, which in its most extreme form dramatises the end of life itself against the potential of a barren planet created via anthropogenic climate change. Foucault's initial theorisation of biopower spoke of "power over man insofar as man is a living being" ("*Society Must be Defended*" 239). But this formulation, as Povinelli observes,

today trips over the space between *en tant que* and *tant que*, between the "insofar as" and the "as long as." This once perhaps belaboured phrasing is now hard to avoid hearing as an epistemological and ontological conditional... *as long as* we continue to conceptualise humans as *living things* and *as long as* humans *continue to exist*. (*Geontologies* 8)

As the future of the human and what the human means grows increasingly precarious, so too do the biopolitical differentiation of the many caesura within the category of "life," and the supporting geontological differentiation of life/nonlife. In the coming chapters I will examine specific instances where such precarity has been negotiated, namely through the cyphers of monstrous life, simulated life, and toxic (to) life.

Before doing so, though, it is worth considering, briefly, whether a different sense of life might be used to produce a different sense of the subject. After all, theorising biopolitics demonstrates the role that biological discourse plays in determining the subject as an idealised human form and a corresponding human nature. It is logical to assume, that is, that changing a variable in the formula of (human/nonhuman)life/nonlife might result in a different outcome. It is for this reason, then, that I now turn to a sense of life found in the influential account of vitalist materialism proposed by Rosi Braidotti, to see if it may

offer an alternative to the sense of life reciprocally templated via the human that seems to underpin humanist biopolitics.

VITALIST MATERIALISM AND THE REPOLITICISATION OF BIOLOGY

As discussed in Chapter 1, Humberto Maturana and Francesco Varela's initial theorisation of autopoiesis grounds life in physical processes, embedding the being of living so that life forms are emergent from the material negotiation of relations between any system and its environment. In The Posthuman, Braidotti identifies the paradigm shift that follows from this theorisation as "the common denominator for the posthuman condition" (2). Taking the implications of this theory seriously, she describes a monistic vitalist materialism³⁴ that recodes life as *zoe*: a "non-human, vital force" (60). Autopoiesis, or the self-organisation of living matter, demonstrates for Braidotti that "Life, simply by being life, expresses itself by actualizing flows of energies, through codes of vital information across somatic, cultural and technologically networked systems" (190). Notably distinct from both the original Greek definition and Agamben's variation to the term, Braidotti's zoe stands for "generative vitality," a sense of life that is not locked to isolated substrates but instead "cuts across and reconnects previously segregated species, categories and domains" (6). Thus, in place of a sense of life that "is" (which implicitly distinguishes states or situations where life "is not"), zoe emerges in the interrelations of organic and organic, organic and inorganic, and even inorganic and inorganic. With this foundation, the paradigm signalled by *zoe* produces a shifting and zigzagging posthuman nomadic subjectivity,³⁵ rather than the idealised human subject that is (re)produced by humanism's exclusionary ontology and which ends at the human skin boundary. This posthuman subject is, in Braidotti's view,

³⁴ Also referred to as a new or neo-materialism, or a "matter-realist or posthuman vitalist feminism" (99), this orientation can be situated in a larger push towards new materialisms that draws on feminist frameworks. Braidotti joins scholars like Karen Barad, Jane Bennet, and Vicki Kirby, who have all described embodied monisms that amplify the postmodern rejection of dualisms like nature/culture, mind/body, and even life/nonlife.

³⁵ Braidotti's vitalist materialism is heavily informed by the works of Deleuze and Guattari, a genealogy which is made clear through the language that she draws on which I have partially replicated here. Of particular relevance is Deleuze and Guattari's examination of life outside of organicism in *A Thousand Plateaus*, and the undifferentiated deterritorialised potential of the "body without organs" (40).

a transversal entity, fully immersed in and immanent to a network of non-human (animal, vegetable, viral) relations. The *zoe*-centred embodied subject is shot through with relational linkages of the contaminating/viral kind which inter-connect it to a variety of others, starting from the environmental or eco-others and include [sic] the technological apparatus. (193)

By decentring the human as never wholly or only human, thinking with the concept of autopoietic vitality as Braidotti does positions the posthuman subject not as an enduring or essential being but as an ongoing relational, contingent, and co-constitutive becoming. Via "becoming-", Braidotti reconfigures oppositional humanist binaries as posthumanist negotiations of processes along multiple axes. These include "becoming-minoritarian, becoming-woman, becoming-insect, becoming-cyborg" (*Nomadic Theory* 21), "becoming-animal, becoming-earth, and becoming-machine" (*The Posthuman* 66).

Notwithstanding this seemingly posthumanist outcome, Braidotti's vitalist materialism can be understood to replicate, in certain ways, the humanist practice of assigning value to that in which humans recognise themselves. And, as can be found in Braidotti's discussion of zoe and "becoming-earth" and "becoming-machine," this reproduction can be seen to lead, autopoietically, right back to the structures of meaningmaking that Braidotti and other posthumanists are seeking to subvert. In this first example, Braidotti sees becoming-earth as reflecting that theorisations of the Anthropocene have prompted a "post-anthropocentric shift towards a planetary, geo-centred perspective" and "reconfigure[d] the relationship to our complex habitat, which we used to call 'nature" (The Posthuman 81). Asking "What would a geo-centred subject look like?" (81), Braidotti's description of becoming-earth incorporates nonliving elements into subjectivising practises as components within the larger planetary system. Autopoietic exchange incorporates, after all, both organic and inorganic materials, as Braidotti suggests when she writes that "we need to visualize the subject as a transversal entity encompassing the human, our genetic neighbours the animals and the earth as a whole" (82). However, by approaching inorganic nonliving elements through the planetary lens of "the earth as a whole," nonlife is here quite literally backgrounded to the role of organic life's environment. Or, in Braidotti's words, "the earth is our middle and common ground. This is the 'millieu' for all of us, human and non-human inhabitants of this particular planet, in this particular era" (81).

Where becoming-earth can maintain a humanist sense of nonlife as something that supports (but is ultimately marginalised by) life, Braidotti's articulation of becomingmachine might be read as duplicating a certain form of anthropocentrism. Most immediately, becoming-machine focuses on machinic and technological others, and can be understood along the same lines as Haraway's cyborg. Humans are not separate (nor separable) from "their" technologies, as "unprecedented degrees of intimacy and intrusion" (Braidotti "Posthuman as Becoming-Machine" 7) have shown the differentiation of these categories, and indeed their subtending categories of "nature" and "culture," to be unsustainable. Not only does becoming-machine undo the hierarchical distinction of human/technology, it also troubles (trans)humanist fantasies of an uploaded and upgraded post-human figure. Rather, as Braidotti identifies in her theorisation of zoe, there is a "mutual dependence between bodies and technological others" (The Posthuman 90-91). Braidotti also progresses becoming-machine beyond a human-machine relation through a sense that *all* matter is "intelligent and self-organizing... not dialectically opposed to culture, nor to technological mediation, but continuous with them" (35). Where Maturana and Varela paralleled organisms to information processing machines, Braidotti reciprocally positions zoe to suggest a "machinic vitality" or "machinic autopoiesis" of technological beings (91; 94), particularly as the possibility of self-(re)creating machines becomes more technologically achievable. She writes,

This results in a radical redefinition of machines as both intelligent and generative. They have their own temporality and develop through "generations": they contain their own virtuality and futurity. Consequently, they entertain their own forms of alterity not only towards humans, but also among themselves, and aim to create meta-stability, which is the precondition of individuation. The emphasis on selforganization and metastability frames the project of becoming-machine of the posthuman subject. (94)

Not only does the concept of autopoiesis lead to reconceptualising life as an energy (*zoe*) that flows between organic and inorganic, it also suggests that the processes of life can be recognised in wholly inorganic systems which are self-organising and self-making. The inference, then, is that such machines might be thought of outside of their relationship to humanity. Rather than being part of the nonliving milieu of (living) systems, such machinic systems individuate to produce relations of similarity and alterity in themselves.

Looking to real-world examples, this posthumanist, post-anthropocentric outcome has not quite eventuated. A number of thought experiments have imagined self-replicating machines as autopoietic non-biological systems that can thrive in locations such as outer
space, which is hostile to organic beings.³⁶ For example, NASA researchers Philip Metzger et al. have suggested that "robotic colonists on the Moon" could bootstrap a selfreplicating industrial complex by "fabricat[ing] a set of 1700s-era machines and then... advanc[ing] them steadily through the equivalent of the 1800s, 1900s, and finally back into the 2000s" (19). Though they speak of machinic possibility that is potentially independent of human oversight, Metzger and his companions are wholly interested in the human in this project, writing that this "industry promises to revolutionize the human condition" by accessing off-planet resources "for the benefit of humanity" (18). Though it is somewhat less obvious, a similar form of anthropocentrism might also be identified in Braidotti's discussion of machinic autopoiesis. Certainly, wholly inorganic machines that are capable of autopoiesis are *functionally* alive, and so can be recognised as forms of nonlife that differ from life only in the non-fleshy materials of their compositions. This erodes the grounds for distinguishing life from nonlife in the first place, correspondingly destabilising the human that sits at the centre of biopolitical definitions of life. However, this erosion is due to recognising life's capacities in nonlife, so that the distinction between living and nonliving material becomes irrelevant because there appears to be no difference in the first place.37

I do not deny that vitalist materialism's orientation towards nonliving material can be recognised as expansive and inclusive. Indeed, by identifying that subjectification processes are not ever solely human, or even wholly organic, Braidotti's use of *zoe* displaces the human-as-subject and pays attention to nonlife in a way that the traditional mechanisms of biopower, and the focus of biopolitical theory in general, do not allow for. My concern is

³⁶ Currently, the best example of a real-world self-replicating system is the RepRap project, started at the University of Bath in 2005. RepRap (*rep*licating *rap*id prototype) is an open source and open design 3D printer, and the goal is that the printer will one day be able to completely self-replicate by printing all the parts needed to make more of the printer. At the moment some parts, such as sensors and microcontrollers, are not able to be printed and so must be externally sourced. The printers are also not yet able to assemble new printers—a human agent (which might be framed as a biological component in the otherwise inorganic system) must physically put the printed pieces together. For more on the RepRap project, see Rhys Jones et al.'s article "RepRap—the Replicating Rapid Prototyper." ³⁷ Further complicating this reading is the fact that *denying* such agential characteristics to inorganic material might also be read as a form of anthropocentrism, one which works to reaffirm certain characteristics as proper to specific arrangements of (organic) matter. Thus, as will be addressed in Part 3 of this thesis, a measure of balancing is needed when navigating this tricky terrain.

that the "expansiveness" of *zoe*'s animist force easily spills from destabilising binaries into swallowing up all forms of being via the characteristics of one form of being, rendering the other as actually, if one goes deep enough, more of the same. This is a reading of Braidotti's vitalist materialism that speaks to a lingering geontological figural tactic which Povinelli identifies as the Animist.³⁸ This tactic of power, she writes, "insists that the difference between Life and Nonlife is not a problem because all forms of existence have within them a vital animating, affective force" (*Geontologies* 17). Thus, Povinelli sees new vitalisms as,

tak[ing] advantage of the longstanding Western shadow imposition of the qualities of one of its categories (Life, Leben) onto the key dynamics of its concept of existence (Being, Dasein). Removed from the enclosure of life Leben as Dasein roams freely as a form of univocal vitality. How, in doing this, are we disallowing whatever Nonlife is standing in for to affect whatever Life is an alibi for? (18)

In the multiplicity of *zoe*, there is a potential muffling of alterity: the silence of nonlife echoes with the noise of life. As Povinelli muses, "When we do this are we denying the ability of other forms (the Not-Life and the not-Nonlife) to undefine, redefine, and define us?" (55).

In moving towards the posthuman to come, there is great sympoietic potential in reorienting beyond life and towards the seemingly foreign state of being that is traditionally classified as nonlife. Indeed, Povinelli's theorisation of geontopolitics highlights that it is not just biological discourse that plays a role in determining an idealised form and a corresponding human nature. Discourses of the inanimate are equally important. Under a regime of power that works through life, such nonliving elements are frequently ignored or objectified. Because it is directed towards examining the nexus of power and life, biopolitical theory offers a means to examine and perhaps affect the ways that the meaning of human being is tied to the question of life, but it does not necessarily afford the conceptual tools needed to orient one beyond life. Though vitalist materialism offers a repoliticisation of life and a different orientation towards the relationship between life and nonlife, nonlife via this framework is easily overwhelmed by subjectifying processes. Consequently, if I lean on these theories in the following chapters in order to highlight

³⁸ I will discuss one of the other figural tactics that Povinelli identifies, the Desert, in Chapter 5 with reference to the Fukushima nuclear exclusion zone and the Anthropocene thesis.

different tactics by which life has been politicised in my case studies, such analyses aspire to exceed or complicate both the work of biopolitical analysis and the becomings of new materialism. Indeed, clinging too tightly to these frameworks would veer the coming discussion away from the conditional of "it depends," straying too close, perhaps, to the definitive declaration of "decisively." For example, by focusing on *zoe*, or on vitality itself, it is easy to forget that "life," even when defined as broadly as it is here, is never neutral. It is in the interest of further identifying the means by which life is conditionally politicised within humanism, therefore, and in exemplifying how humanism can be understood as operating like an autopoietic meaning-making system, that the next part of this thesis pursues a reading of some of the living human's perceived others in post/human contexts. Namely, the cordyceps fungus, which breaches naturalised taxonomical barriers and so is popularly constructed as monstrous; the logic by which a status of "lifelike" (but not alive) is attributed to realistically humanoid robots; and efforts to resettle a nuclear exclusion zone that is toxic to (human) life. PART 2

"LIKE SOMETHING OUT OF SCIENCE FICTION" THE STRANGE LIFE OF THE CORDYCEPS, MADE MONSTROUS IN *THE LAST OF US AND THE GIRL WITH ALL THE GIFTS*

3

I was introduced to the *Ophiocordyceps uniltaralis* fungus via a viral video doing the rounds on Facebook. It begins with David Attenborough's familiarly instructive voice discussing insect life in jungles, and a statistic about ants: "There can be eight million individuals in a single hectare" ("Jungles" *Planet Earth*). An extreme closeup follows a group of bullet ants working together to move the body of a large dead insect back to their colony. "But," Attenborough continues, "jungle ants can't have it all their own way." The nondiegetic music takes an ominous turn, and the camera cuts to a solitary ant frantically rubbing its forward legs against its feelers. Its tiny body dominates the screen, the high magnification and low depth of field of the camera bringing the fibrous textures of the ant's feelers into sharp focus while the surrounding jungle blurs into shades of green and black. In the next shot, an ant sways clumsily as it tries to walk along a branch, misstepping and nearly falling. "Spore from a parasitic fungus called 'cordyceps' have infiltrated their minds," Attenborough explains. The parasite spurs the ant upwards into the trees, then directs the ant to clamp tightly onto a stem with its mandibles.

The camera now lingers on a static shot of an ant wrapped around a thin branch. The music shifts once more, this time to eerie and melancholy strings. "Like something out of science fiction, the fruiting body of the cordyceps erupts from the ant's head." A Content removed due to copyright restrictions. Still from "Jungles" depicting a cordyceps growth from the skull of an ant.

Figure 1: "Like something out of science fiction," the cordyceps "erupts from the ant's head" ("Jungles" Planet Earth)

single grey tendril bursts from the back of the ant's head, unfurling until it is longer than the body of the ant from which it grew (Figure 1). This usually takes "three weeks to grow," but the unsettling scene is over in a matter of seconds through the aid of time-lapse photography. Once fully grown, the cordyceps releases spores to infect more ants, beginning the cycle anew in a process "so virulent, it can wipe out entire colonies of ants. And it's not just ants that fall victim to this killer." With that warning, the camera shifts from following ants to circling other insects that have fallen prey to different strands of the cordyceps: a grasshopper with red-tipped mushrooms snaking out of its stomach; a moth with something that looks similar to shitake bursting from its side; a stick insect with yellow finger-like protuberances along its length. "There are, literally, thousands of different types of cordyceps fungi, and remarkably, each specialises on just one species." This pronouncement is accompanied by a dizzying array of more insects that have been fractured open by the parasite, each blooming a unique fungoid growth. Attenborough's narration continues: "These attacks have a somewhat positive effect on the jungle's diversity, since parasites like these stop any one group of animal getting the upper hand. The more numerous a species becomes, the more likely it will be attacked by its nemesis: a cordyceps fungus."

Emulating the aggressive growth of the fungus itself, knowledge of the cordyceps has spread from the pages of biological journals to the screen of the natural history documentary, and unfurled into spaces of popular culture such as social media. This threeminute film segment I have described was clipped from the eighth episode of the 2006 BBC nature documentary series *Planet Earth*, "Jungles," and was uploaded in 2008 to *YouTube* by BBC Studios with the title "Cordyceps: Attack of the Killer Fungi." As of November 2020, the *YouTube* video has over 9 million views, a figure which does not capture the additional number of times this video has been shared on platforms like Facebook and Twitter. Browsing the comments left on the *YouTube* upload quickly reveals a common trend in viewer responses: "damn nature… you scary" (Multiple Emotions); "Woah, this 3 minute clip scared me more than any horror movie did" (Naam Ke Poojary); "What bothers me about this is that the plants have some kind of… Thought" (FaithyTree). Like FaithyTree, when I first watched this video I also assumed that the cordyceps, a fungus, was a sort of plant. While I later learned the difference between the taxonomic categories of Plant and Fungus, fungi are generally attributed similarly immobile characteristics as plants and so are effectively the same as far as the layperson is concerned.³⁹

From comments like these, it is apparent that the fascination with this video stems, in part, from an unease prompted by the fact that the cordyceps appears to invert the assumed hierarchy of inactive plant-fungus life and active animal life. According to a traditionally humanist world view, nature is something *out there* that is largely passive, waiting for human industry to make something of it. While animals may be attributed some level of animalistic or mechanistic intent, plants tend to be viewed as the ultimate example of inert life, so much so that brain dead humans are colloquially known as "vegetables."⁴⁰ However, this clip of the cordyceps provides high-definition footage that problematises assumptions about what nonhuman life forms are capable of. Besides subverting the hierarchy of plant-fungus/animal, this depiction of the cordyceps also suggests a breaking of the boundary between life and death, to the point where ants

³⁹ In fact, because of their superficial similarities fungi were long viewed as a type of Plant. It was only in 1969, when ecologist Robert Whittaker proposed a taxonomy which named Fungi as its own kingdom, that Fungi came to be formally recognised as a distinct form of life. As scientific techniques have become more sophisticated, the taxonomic boundaries of Fungi have been in constant flux, and a shared origin between the Fungi and Animal kingdoms has been identified. And yet, while Fungi may be more Animal than Plant, for most it seems a common-sense truth that they were still *less* than Animal. For a brief history of the different ways that Fungi have been recognised by taxonomists, see Josep Guarro et al.'s "Developments in Fungal Taxonomy."

⁴⁰ There is a long history in Western philosophy of backgrounding plant life as subservient, passive, agent-less, and a resource awaiting (human) consumption. For more on this, see Matthew Hall's "Plant Autonomy and Human-Plant Ethics" and *Plants as Persons: Philosophical Botany*, in which he traces theorisations of the plant as passive to Antiquity.

infected with the parasitic fungus (or, prioritising the cordyceps, fungus which has made a home in an ant corpse) are often referred to as "zombie ants."⁴¹ These ants resemble the walking dead, their limbic and nervous systems enslaved by the cordyceps they host. Providing documentary evidence of such boundary crossing, this video clip narrativises a sense of nature that is more nebulous than that which is afforded by the traditional hierarchical binaries by which the human delineates itself from its others. In fact, the very division of self/other is put into question via the cordyceps' infiltration of its ant host.

As such, while there is no direct mention of humans in this clip, its implications have the potential to destabilise conventional understandings of what it means to be human. Witnessing the cordyceps and its seemingly uncanny form of life, a viewer may wonder: if agential characteristics are not limited to animal life alone, then what does this mean for the assumed superiority of the human over the natural world? Or, in the words of another *YouTube* commenter, "Every time you start to feel good about yourself, nature raises the bar" (PoisonedBlade).

Throughout this thesis, I suggest that humanism—the cultural logic that produces, maintains, and relies upon the "human"—can be understood as a meaning-making system that, via the paradigm offered by the concept of autopoiesis, restabilises the meaning of the system-self (the human) by becoming more nuanced in the face of potential destabilisation. Through the combined frameworks of systems theory and deconstruction, concepts like "human" and "life" can be understood as event-elements that gain coherency within this system's meaning-making processes. Because it highlights incongruities around foundational humanist binaries, this viral video of attacking "killer fungi" is an event-element that introduces noise or irritation to the system in question. As discussed in Chapter 1, event-elements have status, or make meaning, only from within a system. What this means is that it is not the cordyceps *itself* which has disruptive potential to the human *itself*. Rather, this representation of the cordyceps acts as an irritant to the system of humanism because of existing structures of meaning-making, such as the ontological hygiene that Elaine Graham associates with definitive definitions of human nature (35).

⁴¹ Googling "zombie ant" will return several pages of results that refer to the cordyceps fungus, as well as the twitter handle of @zombieantguy: David Hughes. Hughes is currently an Associate Professor of Entomology and Biology at Penn State, and has made a career of studying parasites like the cordyceps. In addition to being a contributing editor in touchstone parasitology works like *Host Manipulation by Parasites*, he has also acted as an advisor for the producers of the film *World War Z* and the videogame *The Last of Us*, which is discussed below.

Like the body of an insect that sprouts cordyceps, providing nourishment for the fungus to disperse its spores further into the jungle environment, this segment of *Planet Earth* can be understood as having acted as unwitting host to uncanny possibilities. Appearing to breach the naturalised boundaries of life/death, plant-fungus/animal, and self/other, the cordyceps is presented in this instance as something that is not easily contained by humanism's existing structures. The destabilising implications that can be extrapolated from this clip have the potential to lead towards a posthumanist understanding of being which works in more sympoietic ways, where the presumed capacities of different taxonomic categories are not so clearly delineated. However, recognising humanism as a remarkably robust autopoietic system draws attention to the ways that the disturbances signalled by "Cordyceps: Attack of the Killer Fungi" become subdued. While what it means to be human may grow more nuanced in the wake of such disturbances, as humanism becomes correspondingly more complex this added nuance still works to reify a specifically "human" mode of life.

This chapter examines such processes of re-stabilisation by tracing how something potentially alien to humanist knowledge like the being of the cordyceps can be approached in such a way that leads to a firmer sense of what it means to be human. Key to this is the analysis of two texts that were inspired by this documentary segment: the 2013 horror survivalist video game *The Last of Us*, produced by Naughty Dog for PlayStation 3, and the 2014 young adult novel *The Girl with All the Gifts* by M. R. Carey.⁴² Both are post-apocalyptic texts in which the cordyceps is reimagined as targeting humans rather than insects to create monstrous fungal-human zombies. The implicit metaphysical threat evinced by the original "Cordyceps" clip's boundary crossing of life/death, animal/fungus, and self/other is anchored to a more tangible threat: the ominous possibility that is hinted

⁴² In an interview with the game review website *GamesBeat*, subsidiary of *VentureBeat*, *The Last of Us*'s creative director Neil Druckman explains that "the BBC show we were ripping off is *Planet Earth*, where they talked about the cordyceps fungus and how it affects insects." Game director Bruce Straley continues, "Neil and I would watch these videos where they literally use the term 'zombie ants.' That was our jumping-off point... it was a fate worse than death" ("What Inspired *The Last of Us*"). Similarly, in an interview with book review website *The Book Smugglers*, author of *The Girl with All the Gifts* Carey says that "Td been watching a David Attenborough nature documentary, and I sat up and took notice when he started to talk about insect parasites. It felt like there was something in discussion of the *Cordyceps* fungus that really played into some primal fears about possession and loss of self" ("*The Girl with All the Gifts* Blog Tour").

at by the closing narration to the original video. Echoing Attenborough, one *YouTube* commenter writes, "'The more numerous a species, the more likely it will be attacked by it's [sic] nemesis, the cordyceps fungus.' There are 7 billion humans on our planet..." (Incog Elbowtross).

From responses like these, one can extrapolate a sense that the destabilisation that the cordyceps might provoke has been channelled into a reconsideration of what it means to be human, particularly when that destabilisation is run through the paradigms of monstrosity and post-apocalypticism. In Chapter 1, I wrote that post-apocalyptic texts can be used to recognise the cultural anxieties circulating in the context within which a text was produced, as it is the amplification of these anxieties which invariably leads to the "end" of human civilisation. In addition to signposting and playing out cultural anxieties to their extreme, such texts offer a way to view, with a sense of distance, what the human is made to mean. Post-apocalyptic texts are post-human narratives, to the extent that the end of the familiar human is coupled with the apocalypse, either because this end forces the apocalypse or because the apocalypse forces the end of the human. Yet, as Claire Colebrook explains of the genre,

scenes of near-destruction of the human milieu are followed by an exploration of what will survive or remain, or what ought to survive or remain, after the absence of humanity as we now know it. The post-apocalyptic is best read as a question posed: just as the human species starts to approach the real possibility of its actual nonexistence (whether through climate change, viral pandemic, terrorist use of nuclear or bio-weapons, wars on the terror aiming to avert the latter, resource depletion, panic, or any conjunction of the foregoing) there is a barely perceived and half-articulated problem of how and whether humans ought to survive. What is it about humanity that one would want to accept? (*Death of the PostHuman* 190)

These texts rely on a human observer—and humanist meaning-making systems—for their very meaning, and so tend to recuperate the values that humanism most privileges from the world that has purportedly been destroyed. Additionally, the specific mode of life that is named "human" becomes more clearly defined against the monstrous lifeforms that populate these post-apocalyptic settings.

The Last of Us and The Girl with All the Gifts offer different answers to the "halfarticulated problem of how and whether humans ought to survive." In fact, it is possible to interpret the final scenes of *The Girl with All the Gifts* as resulting in the complete end of the current mode of human life, though this is a reading I will complicate. Despite these differences in narrative, both texts literalise the metaphysical threat implicit to the "Cordyceps" clip via zombie figures, depicting versions of nonhuman life that have the potential to trouble key couplings between the human and its presumed other. Thus, when viewed as components within the autopoietic system of humanism these texts are both recognisable as event-elements that themselves result from the event-element of the cordyceps' depiction in *Planet Earth*. Investigating how this system of meaning maintains coherence draws attention to the way that, within these texts, the liminal and uncertain possibilities suggested by the cordyceps come to be framed as almost certainly monstrous.

QUESTIONING MONSTERS

Horrible hybrids and liminal freaks, monsters hover at the edges of the known world. They lurk under the bed, ready to reach out and grab a scared child; haunt abandoned spaces, refusing to be forgotten; they are the products of experimentation, primed to attack their overconfident creators. For scholars of monster theory, these creatures are not simply figments of over-excited imaginations or antagonists in horror stories. Rather, monsters give body to cultural fears, as Jeffrey Jerome Cohen identifies in his proposal that "monstrousness [be] taken seriously, as a mode of cultural discourse" ("Preface: In a Time of Monsters" vii). Monsters, Cohen explains, present "a problem for cultural studies, a code or a pattern or a presence or an absence that unsettles what has been constructed to be received as natural, as human" (ix). While the cordyceps itself is not a monster, it is routinely depicted as a monstrous form of life: attacking killer fungi, like the YouTube upload's title suggests, along the lines of the vengeful sentient tomatoes of the 1978 ecohorror film The Attack of the Killer Tomatoes. Monsters and monstrous representations such as these create, as Asa Simon Mittman writes, a "sense of vertigo..., call[ing] into question our (their, anyone's) epistemological worldview, highlight[ing] its fragmentary and inadequate nature, and thereby ask[ing] us... to acknowledge the failures of our systems of categorization" (8). It is this sense of vertigo, of epistemological monstrosity, that is amplified to create monstrous post-apocalyptic adversaries in The Last of Us and The Girl with All the Gifts.

As is indicated by the reference to epistemology, monsters—cordyceps mutation and otherwise—are imbricated in ways of knowing. Namely, the "monster" is named when one encounters the unfamiliar or the unknown: "that which appears for the first time and, consequently, is not yet recognized. A monster is a species for which we do not yet have a name... it frightens precisely because no anticipation had prepared one to identify this figure" (Derrida *Points...: Interviews 1974-1994* 386). Monsters are only horrific within the context of shared cultural currency—or rather, within a context that has no cultural currency by which to engage this newly encountered, not yet recognised and so monstrous being. Monsters thus reciprocally infer a specific cultural logic, and so "Monsters must be examined within the intricate matrix of relations (social, cultural, and literary-historical) that generate them" (Cohen "Monster Culture (Seven Theses)" 5). This process of recognising (or totalising) the unrecognisable as "monster" is somewhat akin to the way that event-elements can only be understood as such within the context of their specific system of meaning. Before the monster can be "not yet recognized," a broader system of recognition, or meaning-making, must already exist.

Monsters thus signpost, and are contingent upon, the norm against which they are measured. This means that the cultural designation of "monster" can be understood along the lines of Giorgio Agamben's theorisation of the state of exception. As discussed in Chapter 2, states of exception mark the boundary between the "in-" and "out-" sides of a culture. Writing on the topic of legislature and state power in times of crisis, Agamben explains that the state of exception "is not a special kind of law (like the law of war); rather, insofar as it is a suspension of the juridical order itself, it defines law's threshold or limit concept" (State of Exception 4). If something is designated as being outside the interests of a legal system it must, paradoxically, still be included in the legislature that accounts for this exclusion. That which is named an "exception" is constructed against the norm that legislature seeks to protect or maintain: it is the exception that quite literally proves the rule. In a similar fashion, "monsters show us how a culture delimits its own boundaries, how it sees itself; what it respects and desires is revealed in these portraits of scorn and disgust" (Mittman 13). More than marking the unfamiliar, the label of "monster" functions to establish the norm of that to which the monster is opposed, and designates that which the "we" of humanity does not want to be. Or, as Cohen observes, "Do monsters really exist? Surely they must for if they do not, how could we?" ("Monster Culture (Seven Theses)" 20).

The who and what that is included or excluded by the "we" of humanity is reciprocally dependent on the discourse out of which specific iterations of monstrosity are constructed. The monsters of humanism are monsters only to the humans of humanism. "Monster" thus provides an orientation towards matter that is itself anchored to the "human" norm that the "monster" is contrasted to. Cohen explains: The monstrous body is pure culture. A construct and a projection, the monster exists only to be read: the *monstrum* is etymologically "that which reveals," "that which warns," a glyph that seeks a hierophant. Like a letter on the page, the monster signifies something other than itself; it is always a displacement, always inhabits the gap between the time of upheaval that created it and the moment into which it is received, to be born again. These epistemological spaces between the monster's bones are Derrida's familiar chasm of *différance*: a genetic uncertainty principle, the essence of the monster's vitality, the reason it always rises from the dissection table as its secrets are about to be revealed and vanishes into the night. ("Monster Culture (Seven Theses)" 4)

Considering the posthuman orientation of this thesis, one might ask whether a monster can be written so that it does not act purely as a revelation or warning for the human reader. Such a shift in perspective might be achieved by considering the meaning of nonhuman worlds. For example, in an ant's view the cordyceps might well be named monstrous: the foreign being that overwhelms. The contingency of this monstrosity is further revealed when one examines the cordyceps from the vantage of the ant's sympoietic jungle environment, in which the fungus appears as just one more form of life.

Another method of approaching the monster that is potentially posthumanist, or which may allow one to decentre humanist dualisms, is to rewrite the monster from the "inside" in such a way that the human itself is rendered unstable or secondary. While "monster" traditionally designates the Other of the culture in which a text is constructed, there is a growing trend in narratives which feature self-aware and sympathetic monstrous characters. In addition to one of the main characters of *The Girl with All the Gifts*, a non-complete list of recent mainstream works with such a character includes *iZombie*, *The Golem and the Jinni, Warm Bodies*, and *What We Do in the Shadows*, all of which feature others who are not necessarily Othered.⁴³ A common theme of these narratives is that these characters

⁴³ Though it is beyond the scope of this thesis to determine what sort of cultural motivations are underpinning this trend, it is worth noting that these texts emerge at a time when there is increased representation of and for previously marginalised or peripheral communities. Stories like these, which centre on the monstrous protagonist's experience, speak to the struggles that members of such communities face when seeking status, power, or even legitimacy while negotiating the marginalising or prejudicial ideological force of the dominant culture. Monsters, and monster theory, draw attention to such practises, so that "Monster theory can be, for marginalized groups or cultures, empowering, much

are, regardless of their monstrous embodiment, still *people*. In fact, in confronting their own monstrosity, these protagonists frequently demonstrate more humanity than their human counterparts do. For example, Liv, the zombie protagonist of *iZombie*, must negotiate the moral ambiguities of her own consumptive needs, weighing up the value of prolonging her own life against the destruction that her eating practises entail. This is juxtaposed against the mindless eating done by other (human) characters. The posthumanist outcome of such monstrous protagonists is that the human referent or norm is destabilised as the foundational metric by which personhood is determined, as human embodiment is made non-essential to possessing humane characteristics. Simultaneously, the human is here depicted as the actual monster. And yet, it must be acknowledged that "monster" continues to mark a boundary between that which is normative and that which is outside or peripheral to that norm. Though it is semantically rebranded as "person," the implicit reference to an ideal human standard persists via the valuing of human(e) behaviours.

For the purposes of pursuing posthumanist sympolesis, whether it is possible to construct a monster that is not a foil to humanity is, in the end, not a particularly useful question *because* it is a question, rather than a problem, in the sense discussed in Chapter 1. Such a question announces an ambition which is linguistically and semantically located within the philosophical plane of humanism, as the concept of "monster" retains humanism's hierarchical and dualistic orientation towards marking difference. By contrast, problems, in the Deleuzo-Guattarian sense, can be understood as developing new planes of meaning by disrupting existing fields of knowledge to create concepts and provoke different meanings for recontextualised concepts. Questions are composed of concepts, and so become easy to answer when problems lose their tension and meaning stabilises to lend concepts a sense of permanency. With this in mind, it is worth revisiting both Colebrook's assertion that post-apocalyptic texts propose "a barely perceived and halfarticulated problem of how and whether humans ought to survive" (Death of the PostHuman 190), and Cohen's statement that monsters pose a "problem for cultural studies, a code or a pattern or a presence or an absence that unsettles" ("Preface: In a Time of Monsters" ix). To say that monsters provoke a problem (not just for cultural studies) suggests that monsters appear precisely at the moments when existing relations of meaning are thrown

as the closely related project of postcolonial theory has been, as a means of understanding and describing the tools used to abject, to reject and exclude people from the warmth of the mead hall" (Mittman 8).

into instability. This instability has sympoietic potential, especially if one follows the example of Patricia MacCormack in "Posthuman Teratology." MacCormack writes that the deconstructive force of posthumanism "emphasizes that we are all, and *must* be, monsters because none are [sic] template humans... nothing is ever like another thing, nor like itself from one moment to the next" (294). Emerging alongside cultural friction and rupture, monsters can actively contribute to further disruption of meaning because they resist the processes of existing knowledge systems and highlight that all beings are unique forms of existence. Or, returning to the paradigm of autopoiesis, all autopoietic systems are individuated—self-distinguished by distinguishing the self—in unique couplings of system/environment. Writing that "Monsters in themselves are created through a bordering and create bordering encounters," MacCormack proposes that the intermingling found within monsters speaks to a "teratological connectivity" that reconfigures being as becoming (304; 309).

Yet within humanism the very fluidity of "becoming" rather than the static of "being" is what makes monsters *monstrous*. Or, it is due to the self-referential structures of humanism that such disruptions to meaning are labelled *as* disruptive, and so monstrous. This monstrosity comes from the fact that "monsters are not only physically threatening: they are cognitively threatening. They are threats to common knowledge" (Carroll 24). Described by Attenborough "like something out of science fiction," the cordyceps sparks monstrous imaginings because it does not conform to—and so threatens—common knowledge of how the natural world behaves. Placed in the context of the post-apocalyptic genre in *The Last of Us* and in *The Girl with All the Gifts*, the cognitive threat posed by the cordyceps is pushed towards the problem of whether and how the humanist meaning-making systems under pressure might persist. However, as Jacques Derrida writes,

as soon as one perceives a monster in a monster, one begins to domesticate it, one begins, because of the "as such"—it is a monster *as* monster—to compare it to the norms, to analyse it, consequently to master whatever could be terrifying in this figure of the monster. And the movement of accustoming oneself, but also of legitimation and, consequently, of normalization, has already begun. However monstrous events or texts may be, from the moment they enter into culture, the movement of acculturation, precisely, of domestication, of normalization has already begun. One begins to repeat the traumatism that is the perception of the monster. (*Points...: Interviews, 1974-1994* 386)

Naming the unknown "monster" paradoxically works to place that which is not (yet) known within existing knowledge systems. Though monsters signal an instability of meaning that might lead the posthumanist towards sympoietic becomings, "monster" itself continues to be a concept that belongs to the stable plane of humanist discourse, where it serves to mark both the human and its other. In this fashion, the designation of "monster" works to subdue the disruptive potential found at moments of instability and turns half-articulated problems into questions. This process is evidenced in both *The Last of Us* and *The Girl with All the Gifts*, in which the familiar cipher of the zombie domesticises the monstrosity—or potential incoherency—that is suggested by the strange life of the cordyceps as it is represented in "Cordyceps: Attack of the Killer Fungi." The restabilisation of meaning that follows from this domesticising further suggests that humanism can be understood as functioning like an autopoietic system that responds to irritants or potential de-stabilising forces by becoming more robustly complex in its proceedures of differentiating the system-self of the human.

MONSTROUS POST-HUMANS AND ZOMBIES IN THE LAST OF US

The Last of Us takes place in 2033, twenty years after the apocalyptic event of the cordyceps fungus mutating to target humans. A prologue reveals that in 2013, the "Cordyceps Brain Infection" (CBI) multiplied quickly to infect 60% of the global population. Though it is spread through air-borne spore clouds and bites, the process of infection mirrors the one outlined by Attenborough in *Planet Earth*, beginning with the cordyceps fungus taking over the host's nervous and limbic system to produce erratic behaviour in early stages. Late-stage "Infected" are easy to spot, as their faces are distorted by the pressure of fungal growths.⁴⁴ Eventually, the skull bursts open to release spores and spread the infection further. Driven only by the aggressive drive to spread cordyceps spores, anything of the human host's personality is displaced by the aggressive drive to bite new hosts. In the twenty years since CBI first mutated, the institutional foundations of

⁴⁴ The game breaks the Infected into four stages. The first stage of the infection sets in within two days of being exposed to the cordyceps and creates Runners: irritable and hostile monsters that still appear mostly human. The second stage of infection produces Stalkers, which have the beginning of fungal growths emerging out of bulging foreheads. After a year, the Infected become Clickers: highly aggressive and super-humanly strong monsters with the top half of their head exploded by fungus. The final stage, which takes several years to develop, produces Bloaters, in which the cordyceps has spread from the brain to the rest of the body to create a grotesquely bloated and bulging humanoid monster.

human civilisation have largely crumbled, though pockets of survivors live inside dystopian zones that are rigorously controlled and quarantined. For the bulk of the game, players play as Joel: a smuggler who survived the initial outbreak but whose twelve-year-old daughter was killed by a frightened soldier in the chaos.⁴⁵ Players are tasked with escorting a teenaged girl named Ellie across the ruins of the United States to a research facility run by the Fireflies, a resistance group driven by the twofold goal of fighting the martial law that maintains quarantine zones and developing a vaccine for CBI. Bitten three weeks before the game's start but yet to show any signs of infection, Ellie may be the key to finding a cure for CBI. After a difficult journey filled with confrontations with Infected and rogue human militia groups, Joel and Ellie arrive at the research facility to learn that reverse-engineering a vaccine requires extracting the infected brain tissue so that it can be studied-a process which would kill Ellie. Cut-scenes at pivotal moments are used to progress the game's narrative, so that rather than being an avatar for the player's choices Joel is the main perspective through which the player experiences the plot of *The Last of* Us. It is in one of these cut-scenes that Joel—unwilling to sacrifice Ellie for the sake of a cure-breaks himself and an unconscious Ellie out of the Fireflies' facility. When Ellie wakes, Joel tells her that the Fireflies had found other survivors of CBI and were unable to extract a cure, so had given up. The game ends with Joel and Ellie en-route to a pastoral sanctuary established by Joel's brother Tommy.

Thematically, *The Last of Us* is the story of struggling to retain humanity in the face of brutal extremes. Like many texts of this genre, it asks: What ethical boundaries are worth keeping, when individual survival is at risk? If group survival is important, what are the boundaries of the group? What new moral codes develop, when the institutions that supported and enforced morality are destroyed? In the critical dystopia of *The Last of Us*, being human—or rather, being humane—is itself a utopic ambition. Opposing this ambition are the harsh demands of a world without urban comforts and overrun by the Infected. In one cut-scene, a secondary character tells Ellie that he is afraid of becoming "one of those things out there. What if the people are still inside? What if they're trapped in there without any control of their body?" Ellie responds, "They might still look like people, but that person is not there anymore." This condemnation applies to the Infected,

⁴⁵ There is also one segment of the game where players take control of Ellie, as Joel is bed-bound after being injured in a fight. Ellie is soon taken captive by cannibals, and the player returns to Joel to mount a rescue.

but also to the many survivors who now act in brutal ways—or who do not act as "people" ought. In addition to the post-human monsters of the Infected, *The Last of Us* presents these survivors—human bandits, cannibals, and rapists that revel in violently dominating other humans—as a second form of post-human monster. As Amy Green writes in an examination of the reconstruction of morality in *The Last of Us*, "What Cordyceps fails to do in terms of decimating human numbers, humans will do to themselves" (748). For example, at another point in the game, a paedophile leading a group of cannibals tells Ellie, who is now his prisoner, "You kill to survive, and so do we. We have to take care of our own, by any means necessary." The subtext of the scene is that Ellie will likely be raped and then eaten, all in service of keeping the cannibal community alive. In scenes like this, as well as in encounters with the Infected, there is a sense that whatever humanity that once existed has been lost either to the cordyceps itself or because civil governance and other institutions of humanism have collapsed.

Positioned as post-human due to their actions and not their Infected form, the monstrous humans of *The Last of Us* thus act as foils for a humanist morality. As John Berger writes of the post-apocalyptic genre, "what survives is some version of humanity in the midst of the inhuman. Humanity in its essence—such is their claim—is what these apocalypses unveil" (10). Representing the "inhuman," the cruel extremes of the monstrous antagonists' behaviours are contrasted against Joel and Ellie's own "human" struggle for survival. While the actions that the duo must take are sometimes self-serving, these are underscored as being a necessary evil—particularly when juxtaposed against the behaviour of the "hunters," or human survivors who choose to live outside of the rigorously policed quarantine zones that ambush, rob, and kill outsiders travelling through their territory. In one encounter, it is revealed that some hunters release and then chase down captured outsiders for sadistic sport. By contrast, Joel and Ellie are portrayed as killing both Infected and other humans only in self-defence. Less morally straightforward is Joel's behaviour at the end of the game, but this, too, appears more moral—more *human*—than the actions of those he opposes.

By escaping from the Fireflies' research facility with Ellie, Joel denies the group any chance of developing a vaccine for the CBI, resigning the world to the threat of the Infected. However, this is presented as an act of love and compassion on Joel's part. These emotional behaviours or characteristics are, in the context of the game's narrative, upheld as being markers of a redeemed humanity. Over the course of the game, Joel moves from being a bitter isolationist to viewing Ellie as a surrogate daughter. The Fireflies, on the other hand, seem to be led by the cold calculation of their greater mission. A journal entry from Marlene, leader of the Fireflies, reads,

Apparently, there's no way to extricate the parasite without eliminating the host. Fancy way of saying we gotta kill the fucking kid. And now they're asking for my go ahead. The tests just keep getting harder and harder, don't they? I'm so tired. I'm so exhausted and I just want this to end... so be it. Oh I miss you Anna. Your daughter will be with you soon.

Anna is Ellie's mother, a long-dead but once-close friend of Marlene. Marlene has known Ellie since she was a child, yet the language used in this entry is markedly impersonal: "the host" and "the fucking kid." There is a striking lack of empathy in Marlene's quick acceptance that the child she has partially raised must be sacrificed for a goal which, it is made clear in other points of the game, might not even be achievable. When compared to Joel's priorities, the implicit message is that Joel's love for Ellie might have condemned the planet in general to further struggles against the Infected, but that love is part of what makes Joel human. As Claire Colebrook and Jami Weinstein write, "what has come to be known as the postapocalyptic provides a way for humanity to view itself, find itself threatened by a nonhuman other, and then refind itself by reaffirming its proper mode... it is man's proper mode that triumphs" (xxii-xxiii). Thus, what is revealed in Joel and Ellie's conflicts against the various antagonistic human factions which behave as subtly posthuman monsters is a sense of what being human, and so retaining a sense of humanity, means. In the paradoxical "post" of this apocalyptic event, the game asks the player to consider what will remain of the human, and what should the human become in "the midst of the inhuman" (Berger 10). Will humanity prioritise love and empathy in the immediate, or is species survival as a whole what matters, regardless of the coldly inhumane sacrifices needed to achieve that goal?

Against this moral ambiguity, at first encounter, the Infected are a much more easily understood monster of the post-apocalypse. They must be immediately killed, and inhaling spores or being bitten is as good as a death sentence. In the perpetual cycle of infectiondeath-reanimation-hunt-infection, the mutated fungus of *The Last of Us* turns humans into monstrous zombies that are post-human because they are posthumous, a once human form now riddled with and reanimated by an alien interloper. The fungus invades, creating this post-human monstrosity by wiping away the human mind and animating the now deformed body. The Infected lack the most fundamental human characteristic: they cannot be reasoned with, and have only a desire to spread infection. It is in this undead mindlessness that the metaphysical threat signalled by the Infected, and by the cordyceps fungus that inspired the imaging of the fictitious strain that creates the Infected, comes back into focus. Zombies in general, and the Infected in specific, are monsters that transgress the ontological boundaries of life/death and self/other. At the same time, their monstrosity—the label of "monster"—reifies a difference that matters between conscious human life and an inhuman mindlessness that might as well be dead.

Like any monster, zombie characteristics and origins reflect the dominant cultural anxieties of their historical context. Though there are many historical examples of narratives featuring reanimated creatures, the zombie trope as it is currently popularised can be traced to the United States' 1915-1934 occupation of Haiti. Towards the end of this period, "zombies infiltrated American culture" (Boon 35) via narratives that bastardised legends of dead reanimated by medicine men to be servants and labourers and, in this way, trivialised Haitian vodou rituals. While they may have emerged from spectacularising Haitian culture, this first generation of zombies are not Haitian monsters. Instead, they are the monsters of Western colonialism and industrialisation, signposting a growing unease with the American subjugation of the Haitian population and a backlash against increasing levels of industrialisation that was mechanising (and so dehumanising) labour.⁴⁶ The zombies found in texts like the 1932 film White Zombie, the first feature-length film of the genre, act as "reifications of despair and hopelessness, no more than cogs in the mighty machine themselves" (Dendle 47). A successful monster, zombies have mutated to survive their environment. While not every zombie could be freed and returned to life by killing its master, as was the case in White Zombie, zombies continued to be enslaved via vodou-esque mysticism until George Romero's 1968 cult classic, Night of the Living Dead.⁴⁷ Responding to the lingering traumas of the Vietnam War, Romero's zombies are the recently deceased

⁴⁶ For more on how cultural tensions of the period informed the zombie in this initial form, see Peter Dendle's "The Zombie as Barometer of Cultural Anxiety" and Kyle Bishop's "The Sub-Subaltern Monster."

⁴⁷ While the word "zombies" is never used within the original *Night of the Living Dead*, fans quickly named the monsters so. The name stuck, and the series of *Living Dead* films that followed gave new life to the zombie trope. For more on Romero's influence on the genre, see James B. Twitchell's *Dreadful Pleasures: An Anatomy of Modern Horror*. For more on the critical subtext to Romero's series, see Sumiko Higashi's "*Night of the Living Dead*: A Horror Film About the Horrors of the Vietnam Era" and Linda Badley's *Film, Horror, and the Body Fantastic*.

returned to life—to living death—now characterised with cannibalistic urges to consume the living. These zombies are not magically enslaved to a master, nor are they dedicated to fulfilling a curse or prophecy as in the case of some previous texts of the genre. As such, following Romero's representation zombies are not just mindless in their own bodies but also mindless in their collective presence. These characteristics persisted through the next transformation of the zombie, when it was "reconfigure[d...] in light of emerging scientific discourses that tap into deeply felt post-AIDS, SARS, bird flu, and H1N1 anxieties" (Boluk and Lenz 6). The zombie became entrenched in medical discourse and anxieties about uncontrollable pandemics, as seen in the 2009 film *Zombieland*, in which mad-cow disease mutates to target humans more aggressively.

The cordyceps origins of the undead human-fungal hybrids found in The Last of Us and The Girl with All the Gifts hints at yet another shift in both the zombie figure and the cultural anxieties that the zombie signposts. Though the aggression, speed, and cannibalism of previous iterations have been retained, the fungal rather than mystical or viral origin means that these zombies can be situated as reflecting the "revenge of nature" narrative that is typical to ecohorror. Ecohorror transgresses the humanist hierarchisation of human/nature, giving a vengeful agency to the natural world that is not placid enough to remain "out there" somewhere beyond the human. Andrew Tudor writes that the genre solidified in the 1970s's, when "Invasion no longer comes from space (or from whatever that metaphorical 'out there' represented) but from our immediate natural environment" (62). As more public attention is paid towards anthropogenic climate change, ecohorror has seen something of a cinematic resurgence. Recent "cli-fi" (climate fiction) films like The Day After Tomorrow, 2012, Snowpiercer, and Geostorm spectacularise natural disasters as overwhelmingly destructive events, often provoked by human industry. At the same time, films like The Ruins, Into the Grizzly Maze, and The Meg feature plants and animals retaliating against human interlopers with extreme and brutal violence. Returning to the YouTube upload of "Cordyceps: Attacks of the Killer Fungi," a clear sense of ecohorror is present not only in the new title of the clip but also in the comments left on the video: "Just a reminder that nature hates everyone" (GirtheAlienGoldfish); "Nature: Keeping the scales balanced in the most viscous (sic) of ways" (208xx); "So, basically the Cordyceps it's (sic) the way Mother Nature has to say 'you've grown your numbers too high, and that's not cool' to a species" (Slugger Maxman). In reimagining the cordyceps as targeting humans to create zombies, The Last of Us and, it will be shown, The Girl with All the Gifts present

humans as such a species whose numbers have grown too high, whose presence is "not cool" because of the changes humans have wrought on the planet.

While evolving to embody the cultural concerns of their era, zombies have also consistently embodied anxieties about consciousness, agency, and individual identity. Born out of Western colonialism, and the humanist biases that legitimised the necropolitical acts of that colonialism, the monstrosity of the zombie consistently orbits around the values and characteristics that humanism privileges, particularly those faculties of the self-aware mind that have been traditionally viewed as uniquely human. Dendle writes, "Whether zombies are created by a vodun master or by a mad scientist, the process represents psychic imperialism: the displacement of one person's right to experience life, spirit, passion, autonomy, and creativity for another person's exploitive gain" (48). Zombies such as the Infected are victims to this psychic imperialism while also being post-human monstrosities because, at least in this iteration, their humanity cannot be retrieved. Addressing similar themes, Sarah Juliet Lauro and Karen Embry write that "As unconscious but animate flesh, the zombie emphasizes that humanity is defined by its cognizance.... Humanity defines itself by its individual consciousness and its personal agency: to be a body without a mind is to be subhuman, animal; to be a human without agency is to be a prisoner, a slave" (90). The exclusively human characteristic of consciousness is lost the moment the cordyceps breached the boundary of the human body. In this way, The Last of Us makes tangible the metaphysical threat that is suggested by the cordyceps' agential characteristics, which themselves push against the classic stratification of plant (and fungus) life as passive and animal (and human) life as active, humans being intentionally so.

Worked through the cipher of the zombie, the ontological uncertainty that the cordyceps signals is rendered as a form of monstrous not-quite-life. Measured against the standard of meaningful human life—life that is full of meaning due to a perceived capacity for emotion, thought, and agency, and so the focus of humanist processes of subjectification—the Infected are found lacking because they are seen as bodies without minds of their own. They are not just undead, they are no longer meaningfully alive: shifting from being biopolitically produced human subjects to the bare life of human *creatures* in the fashion discussed in Chapter 2 in relation to Giorgio Agamben's theorisation of *zoē*. Now produced by nonhuman (fungal) means, the Infected are pushed outside of the sphere of the state's influence, or rather outside of what remains of the state. At the same time, in this exclusion they are incorporated into humanist structures of

knowledge as nonliving bodies that must, paradoxically, be killed in order to preserve the lives of the remaining humans.

UNBECOMING POSTHUMAN MONSTERS

It is possible to read against the grain, though, and consider the zombie Infected as something that does not necessarily subdue the cordyceps' liminality as monstrous Other. After all, this straightforward reading requires a shared sense of the importance of individual consciousness, autonomy, and the sanctity of bodily boundaries. As an alternative to post-human monsters, the Infected might be understood as posthuman *un*becomings. In this, I draw from Lauro and Embry's "A Zombie Manifesto: The Nonhuman Condition in the Era of Advanced Capitalism," in which they progress theorisation of the posthuman to the ironic conclusion of the antisubject that they name "zombii" (91). This zombii is "a zombie that does not yet exist: a thought-experiment that exposes the limits of posthuman theory and shows that we can get posthuman only at the death of the subject" (87). Their title pays homage to Donna Haraway's "Cyborg Manifesto," identifying that, in much the same way that the cyborg makes difficult the division between human/technology or culture/nature, the liminal status of the zombie means that this figure perpetually troubles the ground upon which distinctions like subject/object or living/dead are made.

However, there are crucial distinctions that must be made between Haraway's cyborg ontology and the perspective that Lauro and Embry outline. First, the zombii, they propose, "takes the subject and nonsubject, and makes these terms obsolete because it is inherently both at once.... It is not, like the cyborg, a hybrid, nor is it like Gilles Deleuze and Félix Guattari's schizophrenic, a multiplicity; rather, the zombii is a paradox that disrupts the entire system" (94). Second, the zombii is not a liberative position to occupy. Where Haraway viewed cyborg imagery as providing "a powerful infidel heteroglossia" ("Cyborg Manifesto" 316), Lauro and Embry emphasise the subjugation that is implicit to the zombie's history of slavery. They write,

simultaneously slave and slave rebellion, [this figure] is a more appropriate reflection of our capitalist moment, and even if it holds less promise than a cyborg future, its prophecy of the posthuman is more likely to come to fruition. The zombie, we feel, is a more pessimistic but nonetheless more appropriate stand-in for our current moment, and specifically for America in a global economy, where we feed off the products of the rest of the planet, and, alienated from our own humanity, stumble forward, groping for immortality even as we decompose. (93)

Combined, these two factors mean that the zombii is not a "becoming-with" as might be found in Haraway's writing, or in other similar orientations like MacCormack's posthuman teratology. Rather, as Lauro and Embry describe in a footnote, it is an "unbecoming" (94). In place of the collaborative sense of becoming-with, the zombii as *un*becoming is wholly disruptive and unreasonable—opposing humanist systems of reason and unable to be reasoned with, it destroys that which it encounters.

While this might appear contradictory to the ethos of "becoming-with," it can in fact be read as the *conclusion* of the posthuman: the unbecoming answer to what posthumanity might be if it were to ever truly break from the systems of meaning to which it responds (humanism, capitalism, biopolitics, etc). Lauro and Embry explain,

If the potential of the posthuman subject exists in its collectivity (and in its multiplicity and in its hybridity), then the posthuman zombii is that which forfeits consciousness as we know it—embracing a singular, swarm experience. What the zombii reveals, therefore, is that the inauguration of the posthuman can only be the end of capitalism. This is not a utopic vision, nor is it a call to arms. We are merely noting that capitalism and posthumanism are more linked than has been previously articulated: one has to die so that the other can begin. The zombii "knows" (of course, the zombii *knows* nothing) that the posthuman is endgame: it is a becoming that is the end of becomings. This is why the zombii must remain antiresolution, anticatharsis, and cannot speak. (106)

This "end of becomings" is only dystopic from the perspective of the very thinking that posthumanism seeks to address. As I have cited in earlier chapters, Cary Wolfe has written that "the nature of thought itself must change if it is to be posthumanist" (*What is Posthumanism?* xvi). This change might very well lead to a sort of zombii thoughtlessness, so that "when we truly become posthuman, we won't even *know* it" (Lauro and Embry 108). How could "we" "know," after all, when such knowing makes sense only within frameworks that themselves have ceased to exist?

Returning to the final moments of *The Last of Us*, it is possible to push towards the sort of unknowability that is figured by the zombii. Doing so, however, requires looking outside the frame of the game, which is written for and played by a human observer. While the game suggests a world without humans, that world is framed in such a way to be made

comprehensible to its intended human audience. Such representations, as Colebrook identifies, "cannot be sustained, and are unsustainable; they—like the thought of extinction itself—will always be for us, and are always co-opted by the narrative lures they fragment" (*Death of the PostHuman* 28). Within the game's narrative, Joel's decision to escape from the Fireflies' research facility with Ellie does not provide a resolution to the Infected. While enclaves of human survivors hold out, such as the pastoral haven that Joel and Ellie return to in the game's closing scene, the implication is that the Infected will not be stopped from ravaging the world. In the unspoken "after" of the narrative, the Infected zombii will likely swarm to bring about the unbecoming end to humanity—an end that is not monstrous, because in this unrepresented and unknowable eventuality there is no human-based system of meaning by which to incorporate the unknown as a referent to monstrosity.

MONSTERS BECOMING-HUMAN IN THE GIRL WITH ALL THE GIFTS

While an unbecoming posthumanist outcome can be read into The Last of Us, The Girl with All the Gifts suggests-on the surface-a posthumanist sense of emergent becoming-monster. The apocalyptic event of this novel, the "Breakdown," was similarly initiated by the cordyceps evolving to attack humans. When exposed to the fungus, humans devolve into ravenous creatures that are called "hungries": "If they get your scent, they'll follow you for a hundred miles, and when they catch you they'll eat you. Melanie is glad she lives in the block, behind that big steel door, where she's safe" (3). Melanie is the central character of the novel, a little girl who lives on a military base and enjoys learning and listening to her favourite teacher, Miss Justineau, talk about Greek myths. The reader quickly intuits that there is something wrong with this situation, though. Fed only once a week, Melanie and the other children at the base eat "chow," "a million grubs, all squirming and wriggling over each other" (10). They live in cells, and when they go to class soldiers strap the children into chairs so tightly that they cannot move their heads. Everything and everyone is doused in a chemical that makes Melanie's eyes burn and her skin itch, and when one soldier spits on his arm to wipe away the chemical Melanie is overcome with hunger.

Eventually it is revealed that Melanie and the other children are hungries, captured and brought to the military base to be studied after human foragers into the ruins have reported seeing the children display some form of rudimentary intellect when they do not scent human prey and are not driven into a feeding frenzy. Miss Justineau and her colleagues are not teachers, but developmental psychologists experimenting to see whether the children can be educated beyond the mechanistic desires of their bodies. Also at the base are scientists, like Dr. Caldwell, who perform vivisections to try and engineer a cure or reversal to the cordyceps' infiltration of the human body. A stand-off between Miss Justineau's approach of "humanising" the children via education and Dr. Caldwell's stance that they are best viewed as fresh laboratory specimens is made irrelevant when the base comes under attack. Melanie, determined to protect her beloved teacher, joins Miss Justineau and Dr. Caldwell as they travel with surviving soldiers to safety. On the journey, Melanie struggles to overcome her own craving for human flesh while dealing with the distrust and animosity of the human survivors she accompanies.

It is in Melanie's attempts to master the biological urges of her own body-the allconsuming hunger and desire to feed-that the negotiation of "becoming-monster" becomes evident. As discussed in Chapter 2, Rosi Braidotti describes a nomadic posthuman subjectivity that navigates multiple axes of becoming in The Posthuman. Becoming-monster can be understood as a similar negotiation of alterity, one that occurs between the extremes of human-monster rather than the binary of human/monster. From a posthumanist perspective alterity is written into any being. This is often demonstrated via the paradigm of autopoiesis, or the paradoxical processes by which the self and other are distinguished require "openness through closure" (Wolfe What is Posthumanism? 15) so that elements of the excluded other are more firmly embedded within the self via structural couplings. At the same time, nothing ever truly emerges alone: "Nature, culture, subjects, and objects do not pre-exist their intertwined worldings" (Haraway Staying with the Trouble 12). The conclusion that can be drawn from this abundant heterogeneity, as identified above in relation to MacCormack's "posthuman teratology," is that "we are all, and must be, monsters" (294). If there are any monsters, then all must be monsters. A monstrous protagonist, Melanie serves as a mirror through which the reader might similarly arrive at this conclusion, especially when taking into account the hybrid human-cordyceps matter of her body. She appears to literally embody the posthumanist (posthumusist to echo Haraway) perspective that "we" are never only "us."

Yet at the same time, Melanie's narrative arc can be read as resisting the potentially posthumanist outcome of becoming-monster. Through the trope of the zombie Melanie's negotiation of human-monster is characterised as the desire to protect Miss Justineau competing with the drive to feast on human flesh. Characteristics of humanity and monstrosity are thus correlated to the division of mindful control over bodily urges in quite a humanist fashion. The figure of the zombie easily speaks to anxieties around mind/body and the feared loss of the autonomous and reasonable mind, as Lauro and Embry identify when they write that "the body is resurrected and retained: only consciousness is permanently lost... the zombie threatens with its material form... the zombie has completely lost its mind, becoming a blank—animate, but wholly devoid of consciousness" (89). Certainly, there are moments where Melanie's body acts mechanistically or instinctually: the smell of human flesh making "her head swim and her jaw muscles start to work by themselves... it was like there was something she was supposed to do and it was so urgent, so important that her body was trying to take over her mind and do it without her" (17). However, as she is able to reflect upon these experiences, to pose questions on her own motivations (even if after the fact) and to learn gradually how to exert control over these bodily responses, Melanie is portrayed as having the level of sentience that is typically restricted to the human. In gaining mastery over her own monstrous body, Melanie's hybridity is supressed in favour of becoming-human, rather than becoming-monster.

Crucially, this is not a re-becoming. Melanie and the other children will never be recognised as rehabilitated humans because it is soon revealed that they were never human in the first place. They are, instead, second-generation hungries, born out of the instinctual coupling of adults lost to the cordyceps fungus. In their undeath, many hosts have mindlessly repeated the bodily routines of their previous lives-at least until the smell of human flesh triggers the desire to feed. Dr. Caldwell reveals to Melanie that when children are born with the fungus, rather than infiltrated by it when already living: "the fungus is spread evenly through the brain. It is thoroughly interwoven with the dendrites of the host's neurons. In some places it actually replaces them. But it doesn't *feed* on the brain. It gets its nourishment only when the host eats. It's become a true symbiote rather than a parasite" (432). Melanie concludes that, due to the trappings of their origins and the preconceived notions of what is left of human civilisation, the hungry children will only ever be treated as material for future lab experiments. This leads her to set fire to a massive growth that is the cordyceps in its mature form, releasing spores in such volume that any remaining human enclaves will be immediately infected. When a dying soldier asks Melanie why she did this,

Because of the war, Melanie tells him. And because of the children. The children like her—the second generation. There's no cure for the hungry plague, but in the end the plague becomes its own cure. It's terribly, terribly sad for the people who get it first, but their children will be okay and they'll be the ones who live and grow up and have children of their own and make a new world.

"But only if you *let* them grow up," she finishes. "If you keep shooting them and cutting them into pieces and throwing them into pits, nobody will be left to make a new world. Your people and the junker people will keep killing each other, and you'll both kill the hungries wherever you find them, and in the end the world will be empty. This way is better. Everybody turns into a hungry all at once, and that means they'll all die, which is really sad. But then the children will grow up, and they won't be the old kind of people but they won't be hungries either. They'll be different. Like me, and the rest of the kids in the class.

"They'll be the next people. The ones who make everything okay again." (456)

Once again, the surface reading of this scene suggests a sense of becoming-monster in which the human—or whatever referent of norm that the monster was contrasted against—gives way to that which was once monstrous. There may come a time, *The Girl with All the Gifts* seems to suggest, when humans may need to accept that the world is no longer (and perhaps never was) *for humans.* Ignoring this does nothing more than prolong humanity's death, while also hindering the emergence of other life forms that are more suited to the environment: a "different" sort of people, who can only emerge in the aftermath of abandoning the human to the forces which are seeking to destroy it. As Melanie says, humanity's others need to "grow up" without violent interference. Where a straightforward reading of *The Last of Us* presents the story of humanity's core values (morality, kinship, etc) enduring despite great odds, *The Girl with All the Gifts* appears to celebrate a willing surrender to the unknown, unrecognisable, and uncanny life that will follow humanity's end.

Yet, in depicting the hungry children as capable of learning and prioritising Melanie's learned control over her own bodily monstrosity, *The Girl with All the Gifts* ultimately functions as a recuperative text populated with beings who are simply not *yet* human. Humanism is grounded in the philosophical secularisation of the Enlightenment, when anchoring meaning to man's capacity to reason rather than God's will made the rational mind central to being human, so that human experience and subjectivity came to be considered "the point where all meaning and value can be judged" (Mansfield 21). Education and the refinement of this rational mind could, it was believed, act as a civilising measure that would in effect human*ise* the sub- or nonhuman. In one extreme example of this, Julien Offray de la Mettrie posits that animals, particularly apes, could be transformed

from "wild" men to "perfect" men via education (9). Miss Justineau embodies this Enlightenment rhetoric, experimenting whether the hungry children can be taught how to be human by introducing them to mathematics, classical literature, and so on. At the end of the novel, she is the sole human survivor of the spores that Melanie unleashes, kept safe inside a hermetically sealed mobile science lab nicknamed "Rosie." Her role in Melanie's new world will be much as it was in the old one:

She sits down on the sill of the midsection door. She has a marker pen in her hand. Rosie herself will be her whiteboard.

"Good morning, Miss Justineau," Melanie says.

A murmur rises and falls as some of the other children—more than half—try to imitate her.

"Good morning," Justineau replies. And then, "Good morning, class." She draws on the side of the tank a capital *A* and a lower-case *a*. Greek myths and quadratic equations will come later. (460)

In a very literal sense, Melanie has created a post-human world—a world without humans, bar one—via the release of cordyceps spores. Yet the human persists as a mode of being that is grafted onto the hungry children. Phoenix-like, humanism emerges from the ashes of human civilisation. Melanie's "next people" who will "make everything right again," a phrase which itself implies a *return* to that which was once ideologically privileged as normality or "rightness," will be humanised through an education in the Western philosophical texts and discourses that are central to humanism. While a zombie is a monstrous post-human that has lost its mind and the zombii is a posthuman mindless unbecoming, the hungries of *The Girl with All the Gifts* are zombies that birth a generation of monsters that have the possibility of becoming-human, in function if not in material form.

THE CONTINUING SF OF THE CORDYCEPS

Imagining futures in which humans have been brought to the brink of extinction by a mutated fungus, *The Last of Us* and *The Girl with All the Gifts* can both be classified as speculative fiction or SF. The depiction in the "Jungles" episode of *Planet Earth* which popularised the cordyceps as a "killer fungus" can also be understood as an SF, not only because Attenborough describes the fungus "like something out of science fiction." It is an event-element that gains its meaning within the meaning-making system of knowledge of humanism, but also as one that defers meaning into future event-elements. As such, *Planet Earth*, and the ensuing *The Last of Us* and *The Girl with All the Gifts*, can all be understood as SF "string figures" (Haraway *Staying with the Trouble 2*), or patterns of knowledge which in turn pattern future knowledge. What is perhaps less obvious is that "monster" and "zombie" can also be recognised as SF event-elements, speculative fabulations that frame nonhuman liminal modes of life *as* liminal and so non-normative. The sympoietic potential of the cordyceps is domesticised or made known via the figuring tactics that these disparate SFs provide, so that humanist meaning-making structures are restabilised in quite an autopoietic fashion.

Yet monsters mutate. Carey's novel The Girl with All the Gifts was adapted into a movie of the same name, released 2016, and in 2017 he published The Boy on the Bridge: a prequel which unfolds the story the researchers attached to the mobile lab Rosie. In 2019, Netflix released the documentary series Our Planet, also narrated by Attenborough and featuring the same production team as *Planet Earth*. One of the stars of its "Jungle" episode is the cordyceps, which is once again shown infiltrating an ant, driving it into a tree, and blooming from the ant's head. The eerie otherness of the fungus is amplified through higher resolution cameras, which capture the ant's desiccation as the cordyceps drains its host of nutrients in order to bloom in extreme detail, and by evocative nondiegetic crackles that provides a sense of what that dehydration and growing might sound like. The Last of Us: Part II was released mid-2020. In it, the first game's emphasis on empathy and human connection is inverted, with Ellie embarking on a quest of revenge. Though the narrative foci of these texts vary, their production demonstrates that the cordyceps continues to be a source of fascination. The SF of the cordyceps is thus not just a science fiction, a string figure, or speculative fabulation. It is also a "so far," an ambiguity that is potentially sympoietic yet, because of the implicit connotations of uncertainty within humanism, also ominous. The liminal and strange sense of life that the cordyceps signals has not undone humanism's dualisms, nor has the fungus evolved to unbecome humans... so far.

4

"LIFELIKE, BUT NOT ALIVE?"

THINKING LIFE IN WESTWORLD

Critical life studies, we suggest, is inclusive of the gamut of recent theoretical "turns" and "studies" (including, among them: the affective turn; new vitalism; new materialism; the ontological turn; anti-, in-, and posthumanisms; critical climate change; speculative realism; and feminist, trans, queer, critical race, postcolonial, animal, technoscience, and Anthropocene studies) insofar as they all, to varying degrees, theorize around several intertwined concerns: the continual modulations of the epistemology, ontology, and resituation of the status of the human (now seen as a living rather than a knowing being) and the various beings included in/excluded from it; the reconsideration of embodiment, matter, and materiality; the enigmatic question of what constitutes life; the fraught determination of whose lives matter. (Weinstein and Colebrook 4)

When I first read this portion of Jami Weinstein and Claire Colebrook's introduction to *Posthumous Life: Theorizing Beyond the Posthuman*, in which they lay out the many projects that can be grouped together under the banner of "critical life studies," I was struck by the parenthetical aside that humans are "now seen as a living rather than a knowing being." I briefly addressed this shift in Chapter 2 in regards to the centrality of life to the modern deployment of biopower, which discursively produces the human as an idealised mode of life. While life itself is increasingly a problematic for posthumanists and other academics writing in overlapping disciplinary areas, many posthumanists also frame the human first as a living (rather than knowing) being in a bid to decentre the humanist prioritisation of "human" consciousness.⁴⁸ What is perhaps obscured by Weinstein and Colebrook's parenthetical, though, is that *living* and *knowing* cannot be easily untangled, particularly within certain senses of posthumanism.

For posthumanists seeking to rethink being via the paradigm provided by autopoiesis, the concepts of "living" and "knowing" intermesh. Acknowledging both the central role that the concept of autopoiesis plays for many posthumanists and the posthumanist ambition of reconfiguring the forces by which knowledge of the human and its others are constructed, it is necessary to look more closely at the assumptions that are embedded within this perspective that thinks life *as* thinking. As Neil Badmington challenges: "what remains of humanism in the posthumanist landscape" (15)?

"Autopoiesis" was first used by Humberto Maturana and Francesco Varela to theorise life, as was discussed in Chapter 1. Their formative work *Autopoiesis and Cognition: The Realization of the Living* includes a republication of Maturana's 1970 article "Biology of Cognition," in which biology and cognition—living and thinking—are presented as interlinked: "*Living systems are cognitive systems, and living as a process is a process of cognition*" (13). "Living" is here constructed as a sort of thinking-life, as Maturana and Varela posit that in order to live, systems must be able to materially process the interactive information that produces and is produced by living. This processing takes place within the points of contact between system/environment and the various internal structures that determine how new information is responded to. Cognition is thus dispersed across, and embedded within, the flow of information that is gathered and processed by bodily organs like skin, ears, eyes, and brain. In this fashion, cognition is displaced from being an attribute of the mind and is also rendered a characteristic essential to all forms of life.

⁴⁸ While early posthumanist texts can be viewed as a reflexive negotiation of technologically mediated post-human imaginings like the cyborg, android, or robot, recently scholars of the post-humanities have emphasised life by turning their attention to the question of the animal and, increasingly, the vegetal, as seen in the list of biopolitically focused works provided in Chapter 2. This gradual reorientation is perhaps most obvious, though, in Donna Haraway's trajectory from "A Cyborg Manifesto" to *Primate Visions* to *The Companion Species Manifesto* to *Staying with the Trouble*. As was identified in Chapter 1, while Haraway does not see herself as a posthumanist, it is undeniable that she has become a proper name within the field.

Having established that all living systems are cognitive systems, Maturana distinguishes between mechanistic cognition—the sort traditionally associated with instinctive animal behaviour—and the self-awareness that is traditionally ascribed only to the human. He refers to the vital information processing of being alive as cognition, and to the knowledge *of* information processing as "self-cognition" (6). He writes,

there are organisms that include as a subset of their possible interactions, interactions with their own internal states... as if they were independent entities, generating the apparent paradox of including their cognitive domain within their cognitive domain. In us this paradox is resolved by what we call "abstract thinking", another expansion of the cognitive domain. (13)

While Maturana does not deny self-cognition to non-human organisms, the complexity of abstract thinking is presented, at the very least, as a rarified capacity. Furthermore, self-cognition is a rarified capacity that humans *do* have, according to Maturana. Notably, his reasoning for this echoes René Descartes' *Cogito*, or the foundational premise from which the philosopher derived all else in his sceptical philosophy. Similarly, "Biology and Cognition" begins with the observation that "Man knows and his capacity to know depends on his biological integrity; furthermore, he knows that he knows. As a basic psychological and, hence, biological function cognition guides his handling of the universe and knowledge gives certainty to his acts" (5). The paradigm of autopoiesis thus takes for granted a differentiation between a living organism's capacity to think the world and its capacity to know that a world has been thought. Despite the posthumanist aims towards which autopoiesis has been directed, and despite the shift from humans as "knowing" to humans as "living," this embedded distinction has the potential to continue reifying humans as a uniquely knowing mode of life, retaining an implicit standard of that which is meaningfully alive like humans.

The science fiction television series *Westworld* (2016-ongoing) provides one avenue by which to view how making life central to the way being is encountered might shore up the very humanist practices of exclusion and domination that posthumanists seek to deny, particularly when that conception of life is construed as information processing and so interpenetrated with questions of thinking and knowing. The series also offers a vantage from which to consider what is at stake for humanism (and reflexively, for posthumanism) when the determining of life itself is put under pressure. Within this narrative, sophisticated examples of artificial life (AL) and artificial intelligence (AI) named "hosts" populate historically themed adult resorts and theme parks. Their behaviour is predetermined according to complex narrative loops, and the hosts are programmed to be unknowing of their own status.⁴⁹ Though they have become progressively indistinguishable from the living humans who visit the park, park founder and creative director Robert Ford makes the final dividing line between humans and hosts clear when he tells his assistant Bernard Lowe, "Just don't forget the hosts are not real. They're not conscious" ("The Stray"). The ideal of independent consciousness—of knowledge that gives certainty to acts, to echo Maturana—is contrasted against the simulated consciousness or programming that animates the hosts.

Indeed, over the course of the first season of *Westworld*, "conscious," "real," and "alive" are used almost interchangeably to differentiate the meaningful life of humans from the nonmeaningful existence of their technologically created counterparts. This distinction is quickly complicated by hosts behaving unpredictably, demonstrating what appears to be the development of self-awareness. In one storyline, Bernard eventually learns that he is in fact a host programmed to think himself human, working in the facilities of the Westworld park as a lead programmer managing the behaviour of other hosts. When he confronts Ford⁵⁰ and demands more information about his traumatic memories, Ford explains why such back-stories are necessary: "Every story needs a beginning. Your imagined suffering makes you lifelike." Bernard responds, "Lifelike, but not alive?" ("Trace Decay"). Lingering in the conditional of Bernard's "alive?", exploring the maintenance and troubling of the human/host distinction, leads towards a speculative provocation for the sympoietic posthumanist. If life itself is understood as cognition, and if the human is "now seen as a living rather than knowing being" (Weinstein and Colebrook 4), what does it mean to be recognised as, to be *seen as*, cognitively alive?

⁴⁹ Initially, hosts are unable to internalise information that does not fit into the fiction of their existence, and so they can be viewed as systems that are interactionally open but operationally closed to this input. For example, during a diagnostic test the outlaw host Hector is shown a series of photos of high-speed trains, city lights, and human Westworld employees. "They don't look like anything to me," Hector responds automatically, his programming blinding him to the information that could potentially disrupt his programming ("Trompe L'Oeil").

⁵⁰ Though I introduce characters with their full names, when referring to them again I will use the name that they are consistently called within *Westworld*. Hence, *Bernard* Lowe and Robert *Ford*.

UNCANNY NECROPOLITICS

Set in the near future, Westworld (2016-ongoing) is simultaneously an SF of the future and the past. Season one, which will be the focus of this chapter, takes place largely within the "Westworld" resort, a frontier fantasy of the American Wild West where AI embedded in fabricated humanoid bodies act as hosts to human guests, functioning like non-player characters in a sandbox video game.⁵¹ The central areas of the park are family friendly, with hosts following pre-scripted branching interactions in order to act as tour-guides to a lost time for the wealthy human guests and provide adventurous quest hooks. The hosts play roles that are familiar to any who are versed in the tropes of Wild West narratives: Delores Abernathy, the rancher's innocent daughter; Teddy Flood, the gunslinger searching for redemption; Maeve Millay, the world-weary bordello madame; Hector Escaton, the outlaw with an axe to grind. The violence that gives the Wild West its "wild" descriptor is mostly relegated to the edges of the park, where guests can live out extreme fantasies of domination and subjugation. The tag-line on Westworld's advertisements is "Live without limits" ("The Adversary"),⁵² and indeed within the park no limits are placed on how the human guests spend their time. Playing an adult version of "Cowboys and Indians," guests seduce, rape, torture, and murder the lifelike hosts in bordellos, saloons, and ranches.

Westworld's longevity and commercial success depend on offering an immersive world filled with morally uncomplicated hedonism, and the park must balance the hosts being believable as human proxies against ensuring that it is clear to all involved that, regardless of the realism, the hosts are not actually alive. The need for this balancing act is underscored in an early episode of the season when Lee Sizemore, head of narrative development, warns the park's senior manager, Theresa Cullen, about the commercial dangers of the latest host update: "Bernard and Ford keep making the things more lifelike. But does anyone truly want that? Do you want to think that your husband is really fucking that beautiful girl, or that you really just shot someone? This place works because the

⁵¹ At the end of season one, it is revealed that Westworld is one of a series of "worlds," theme parks, or holiday destinations run by the parent company Delos. Season two gives glimpses of Shōgunworld (set in Japan's Edo period), the Raj (set in the "British Raj," or India's occupation by English colonisers), and Warworld (set in Nazi occupied Italy during WWII). Notably, each of these periods provides the opportunity for the necropolitical violence that is both glamourised and critiqued throughout *Westworld*'s narrative.

⁵² In what is surely an act of deliberate irony on the part of the showrunners, the ad features only shots of the nonliving hosts, whose lifelike existence is entirely limited.

guests know that the hosts aren't really real" ("The Original"). Lee's reservations reveal that in the park's operation, the uncanny valley between living humans and artificially alive humanoid robotic hosts has been incorporated into a cultural logic that is akin to necropolitics.

The "uncanny valley" was first proposed by Masahiro Mori in 1970 as a way of describing the affective response provoked by technical objects, like robotic prosthesis and robots, which appear human-like. He writes that as the realism of such objects increases, "our affinity towards them increases until we come to… the uncanny valley" (98).⁵³ Describing a human prosthetic hand, Mori suggests that "once we realize that the hand that looked real at first sight is actually artificial, we experience an eerie sensation" (99). Though Mori was a robotics professor, he concludes his article by advising that "We should begin to build an accurate map of the uncanny valley so that through robotics research we can begin to understand the human" (100), gesturing towards a sense that this valley lies right at the boundaries of that which is normatively understood to be human. In Mori's initial theorisation, the human that the uncanny valley reveals is linked to a broad sense of "realness" and "aliveness," and is contrasted against the artificial liveliness found in sophisticated technological artifacts. Via this distinguishing of real and artificial, human life is sanitised of, and differentiated from, technological nonlife.

However, prior to the development of AL and the corresponding division of technologically produced artificial life from life, life itself must already be technologically mediated. By this I do not just refer to how biopolitical technologies mediate the act of living, particularly living as is done in the mode of the human, but rather to the ways in which "life" has come to be understood through computational and cybernetic information paradigms. Maturana and Varela's theorisation of autopoiesis is one example of this, but they were far from alone in characterising life via (and as) information processing. In *How We Became Posthuman*, N. Katherine Hayles argues that humans now occupy a "computation universe," in which "the essential function of the universe as a whole is processing information" (239). For Hayles, this is primarily due to the developments of the Macy Conferences in cybernetics, during which biology provided the "clues to build computers, and computers provided clues for theoretical biology" (239-

⁵³ Mori's original article was published in the Japanese journal *Energy*. I am citing a 2012 English translation published in the *IEEE Robotics & Automation Magazine*, translated by Karl MacDorman and Norri Kageky.
250). Similarly, in *Wetwares: Experiments in Postvital Living* Richard Doyle writes that "since Erwin Schrödinger's articulation of the genetic substance as a 'code-script' in 1943, life itself has gradually been conflated with *information*" (20). He continues,

"Life," as a scientific object, has been *stealthed*, rendered indiscernible by our installed systems of representation. No longer the attribute of a sovereign in battle with its evolutionary problem set, the organism its sign of ongoing but always temporary victory, life now resounds not so much within sturdy boundaries as between them. The very success of the informatic paradigm, in fields as diverse as molecular biology and ecology, has paradoxically dislocated the very object of biologic research. "Biologists no longer study life today," writes Nobel Prize winning molecular biologist François Jacob, "they study living systems." (ibid.)

The study of AL does not just follow this discursive shift temporally. It is possible to imagine and construct artificial life *because* a computational sense of life has been established. Perhaps the uncanniness of humanoid, realistic technical objects is less that they remind the human of its own mortality, as Mori first suggested,⁵⁴ and more that, as examples of artificial liveliness, they reflexively defamiliarise life. Or, as Doyle writes, "there is something uncanny about alife. It's a creepy doubling of something that no longer appears: 'Life''' (ibid.). At the same time, the uncanniness the human feels when encountering AL provides an opportunity in which to insist that AL is not really alive (with the implicit addendum of "like humans are"), suppressing any ontological stability that might follow.

A slight but significant variation to Mori's uncanny valley can be found in a study conducted by psychologists Kurt Gray and Daniel Wegner, who relocate the valley as signalling anxieties about the interior status, rather than exterior appearance, of technological objects. They propose "that humanlike features may be unnerving because of what they prompt us to see in robots—a mind" (126). Rather than asking whether a robot looks realistic or alive, the emphasis here is on considering whether a robot acts as if it has a mind of its own. Gray and Wegner explain that machines which appear mindful

⁵⁴ Comparing the uncanniness of human death to the eerie feeling that humanoid robots invoke, Mori writes that "when we die, we are unable to move; the body goes cold, and the face becomes pale.... The sense of eeriness is probably a form of instinct that protects us from proximal, rather than distal, sources of danger" (100).

have the capacity to be "unnerving even without a humanlike appearance" (ibid.). In place of human physicality, this perspective privileges the human capacity of independent consciousness. What this demonstrates is that wherever the uncanny valley is recognised reflexively marks that which the human and *only* the human is expected to be. This association can be further identified in Gray and Wegner's conclusion to their article which, like Mori, includes a reflection on the human. Their research, they write,

speaks to the broader idea of what makes us human.... The idea of a fully human machine may only be an idea, but advancing technology suggests that there may come a time when we are swept away by deep poetry about the human condition, written not by flesh and blood, but by silicon and metal. The question is whether we will always be unnerved by that idea. (129)

Yet there is a problem that precedes this question of whether humans will always be unnerved by the possibility of technological artifacts replicating that which "makes us human." Specifically, this problem deals with the nature of that which is purportedly being mimicked, or that which has been artificially replicated by technologies. Artificial life and artificial consciousness both place essentially and exclusively human characteristics under pressure by inferring that such characteristics do not solely "belong" to the human, while also suggesting that the referents themselves (of human life, of human consciousness) are not particularly durable. As with the "creepy doubling" of AL that Doyle identifies, it is possible that the consciousness that AI is modelled after is not even a stable referent in the first place. Before pursuing this line of thought, though, it is necessary to return once more to Lee's insistence that Westworld only "works" as long as the hosts are perceived as not *really* real—or, as artificial. In this emphasis, Lee further reveals what is at stake in the separation of life from lifelike via the uncanny valley.

While humanoid robots are unnerving because they suggest deep ontological instability, they also unnerve because the prospect of "fully human machines," as Gray and Wegner name them, poses an ethical dilemma of personhood. "Person" is a legally recognised status, as is indicated by the many court cases which dispute an animal's personhood even while this status is granted to corporations, but also a moral one.⁵⁵ From

⁵⁵ The complexities of personhood are far too great to cover here, especially as issues of race, gender, illness, reproduction, animality, corporations, technologies, and even geological formations continue to add new dimensions to this philosophical problem. As such, I have offered only the briefest gloss of the

a humanist perspective, to be named a person is to be afforded the level of ethical consideration that is traditionally reserved for the human subject, or the self that is recognised as possessing certain characteristics and deserving of standardised rights. Within this logic, people are in a binary relation with things, as is suggested by Lee's complaint about the changes Bernard and Ford have made to "the things." Roberto Esposito speaks to this division in his opening to *Persons and Things*, writing that "No other principle is so deeply rooted in our perception and in our moral conscience that one is recognised as person rather than thing—because things are the opposite of persons" (1). Despite the adage of universal human rights, being a biological human is no guarantee that one is recognised as person rather than thing. Instead, this recognition is interlinked with the "right to have rights," as Hannah Arendt describes it (296), so that being a person means being a recognised member of a politicised community.

When *Westworld's* narrative begins, the hosts are not viewed as people, but as things.⁵⁶ Having been othered via an uncanny valley in which life and consciousness are conflated, the hosts are made available to be, as Lee describes, shot and fucked by guests. The power imbalance that follows from this differentiation of person/thing is further evident within, and naturalised during, the host's routine diagnostics, when they sit nude in front of fully dressed technicians. In one scene, Ford furiously mocks a technician who has draped a piece of cloth over a host: "Why is this host covered?... Perhaps you didn't want him to feel cold, or ashamed. You wanted to cover his modesty, was that it?" Ford takes a knife and slashes into the host's cheek. The host is nonresponsive to the stimulus, and Ford continues, "It doesn't get cold, doesn't feel ashamed, doesn't feel a solitary thing that we haven't told it to" ("The Stray"). The point is clear: the host does not react to Ford's attack because "it" is not really alive, and has no needs or desires of its own. In fact, this attack is not really an attack at all, but merely purposeful damage to an object. "It," as Ford now names the host, is not a person, so there is no need to waste time worrying about

subject in order to provide some context for the coming discussion. For an introduction to the concerns at play in debates over personhood, see James Walters' *What is a Person?*, Jenny Teichman's "The Definition of a Person," or William Stephens' *The Person*.

⁵⁶ For a longer discussion of personhood in *Westworld*, see Juli L. Gittinger's "Defining Personhood in a Posthuman World," in which she uses the series to delineate "inward" from "outward" personhood. Alternatively, in "Long Live the New Flesh: Race and the Posthuman in *Westworld*," Sherryl Vint argues that the personhood of humans is an inherently racialised concept, and suggests that the divergent storylines of season two demonstrate different negotiations of this racialisation.

what it feels because it does not actually feel. What this scene also highlights is that the binary of person/thing, and the corresponding dualisms of human/other and living/lifelike-nonliving, are in an often asymmetric but always co-constitutive relationship. In a discussion of slavery, which renders beings own-able things, Esposito writes that "what was presented as an opposition in reality shows itself to be a mutual implication and, indeed, a dispositif by which persons and things are fitted together in a sort of *chiasmus* structure, a reversed crosswise arrangement, that projects the profile of one onto the other" (*Persons and Things* 25). As Sherryl Vint writes in her analysis of *Westworld*, the dispositif that Esposito identifies is "a model of the human as a being with 'power over' other beings" ("Long Live the New Flesh" 148). Thus, within a structure of meaning-making like humanism, where "the capacity to own and control things… [is] made central to the idea of a person" (ibid.), it is *through* the determination of the host as a nonliving and nonconscious thing that Ford simultaneously (re)confirms his own status as a living conscious human person.

The outcome of this approach to human/host differentiation is that the Westworld park can be read as a necropolitical space in which pleasure is gained by human subjects at the expense of an objectified and abjectified other.⁵⁷ In a mobius strip of paradoxical logic, in season one of *Westworld* only the nonliving hosts can "die." A shot between the eyes, a knife across the jugular, a neck broken by hanging—all will end host existence. Yet, this death is never permanent. At the completion of each narrative loop, host bodies are remade and their programming is reset. The nature of host existence means they are functionally immortal but in a state of perpetual becoming-dead. The objectifying implications of this necropolitical framing are immediately evident in the storyline of one of the leading female characters of the show: the host Delores. She is raped and murdered multiple times in the first few episodes, often by the Man in Black, a violent human guest who serves as a villain with mysterious ambitions in season one. In a similar fashion to Bernard's backstory, mentioned earlier, while Delores may appear to suffer—screaming

⁵⁷ The flipside of this paradox is that during season one living guests are unkillable, as programming and protocols are in place to keep humans from being mortally wounded. In the first episode of season one, the Man in Black taunts Teddy by guiding the gunslinger's gun to his own forehead, saying, "Let me help you, son." When Teddy collapses, unable to follow through with actually harming his human tormentor, the Man in Black snidely observes, "Seems you're not the man you thought you were" ("The Original"). The implication of the scene is that not only is Teddy unaware of his own limitations, but also that as he is unable to enact violence upon another, he is not really a "man" at all.

and futilely fighting against the repeated aggressions of the Man in Black—it is an imagined suffering that serves to make her more lifelike.

For at least one visitor to the park, the realism of this suffering prompts the question of "alive?", as seen in the subplot that shows human guest William falling in love with Delores. William tells his brother-in-law Logan that she is different to other hosts, a person in her own right, because "she remembers things, she has her own thoughts and desires" ("The Well-Tempered Clavier"). Held accountable by Delores' seemingly knowing gaze, William is disconcerted by the hedonism and violence that he encounters within Westworld, and implores that Logan help him rescue Delores from her trapped existence, saying "To keep her in a place like this, it isn't right" (ibid.). Logan responds by gutting Delores, revealing that her insides are fully mechanic. This, along with finding Delores remade on a future visit to the park, with her narrative loop restarted and another guest taking up the role that William had previously occupied, causes William to finally believe what the other humans at the park have told him all along: while simulating "she" Delores is really an "it." At this point in the narrative, it is revealed to the viewer that Westworld has been told non-sequentially, and that the Man in Black and William are one and the same. This realisation of thing, rather than person, serves as a catalyst that drastically alters William's future visits to the park, as he throws himself into the gory excess that is afforded by Westworld's necropolitical structures. After becoming a major investor in the park, William observes Delores during a diagnostic session and tells her passive and naked form that "You really are just a thing. I can't believe I fell in love with you.... Do you know what saved me? I realised it wasn't about you at all. You didn't make me interested in you, you made me interested in me. Turns out you're not even a thing, you're a reflection" ("Reunion"). Yet as can be seen in Esposito's account of a person's dispositif as power over things, things are intrinsically reflections, because they affirm the status and meaning of the person who has determined the thing to be a thing. Recognising a host's status as nonliving thing, rather than as a feeling person, is what transforms William into the Man in Black, who at one point says "I really ought to thank you Delores, you really helped me find myself" ("The Bicameral Mind").

Now immersed in the necropolitical structures of the park as a gleeful mechanism of the perpetual making-dead of the hosts, the Man in Black reflexively "finds himself" fully human, fully living, and fully conscious of his own actions. Thus, in an amendment of Achille Mbembe's description of this variation to biopower, in Westworld power is exacted through subjugating the "life[like] to the power of death" (39), a relational subjugation which in praxis (re)establishes the superiority of the living human subject. In colonial spaces, this was achieved by rendering the "*savage life*" (24) of the uncivilised other as nonhuman, or as a less-meaningful-than-human form of life that was, accordingly, not afforded the recognition of person. The host's simulation of life can be paralleled to the "savage" life that necropolitical structures constructed within colonial spaces, which were framed as "just another form of *animal life*, a horrifying experience, something alien" (ibid.). Westworld operates similarly by overtly making conscious life central to how the being of humans is distinguished from host existence. Hosts are not meaningfully alive, are not meaningfully people, and do not meaningfully die, and so are relegated to a subordinate ontological position upon which humans can enact violence without ethical repercussion.

An idea of the "not," or a sense that something is missing from the other but present in the human self, is intrinsic to the logic that supported the withholding of a human level of ethical consideration, or the status of personhood, from the indigenous populations of colonised areas. As Mbembe writes, colonial conquerors viewed savages as "natural' human beings who lack the specifically human character, the specifically human reality" (ibid.). This lack meant that widespread massacre did not register as genocide. Likewise, as Dinesh Wadiwel has discussed in relation to the animal industrial complex by which humans extinguish life on a global scale, necropolitical framing via lack means that such acts are "not perceive[d]... as a systematic form of orchestrated violence; that is, as a form of war" (90). In a similar fashion, the hosts in Westworld are positioned as kill-able (but not murder-able) others via reference to a specific human character and reality that they appear to lack. In the early days of the park, the host's manufactured origins meant that this lack was easier to recognise, as their bodies were mostly mechanical. However, with technological advancement these bodies begin to be made in an organic substrate. The Man in Black tells a bleeding Teddy that "You used to be beautiful. When this place started, I opened one of you up once. A million little perfect pieces, and then they changed you, made you this sad, real mess. Flesh and bone, just like us" ("Contrapasso"). Though this change might lead to the hosts being viewed as more lifelike, or more like humans, their ontological inferiority continues to be guaranteed because the hosts are seen as lacking the most human characteristic of all: a mindful awareness of one's own being. Rather than a "knowledge that gives certainty to acts" (Maturana 5), host behaviour moves through predetermined patterns, and they are cognitive only of that which their programming permits. Though they are sophisticated simulations with rich back-stories, in the eyes of the park's human visitors the hosts possess (and are possessed by) a machinic

mindlessness that can be understood along the same lines as the savage or animal life that Mbembe refers to. To better explain this parity, I turn now to the text that the *Westworld* television series is based on: the 1973 film of the same name.

THE MACHINE-ANIMAL AS SAVAGE(LY) LIFE(LIKE)

The original Westworld movie is similarly set in historical theme parks that are populated by robots "scientifically programmed to look, act, talk, and even bleed as humans do." The narrative of the film is fairly typical to the era: cutting edge technology turns against its human master, while hubris and corporate greed leads those in charge to ignore early signs of danger, and a cast of interchangeable thousands suffers in the resulting chaos. The revelries of human guests attending West World, Roman World, and Medieval World are disrupted when the robots malfunction and begin attacking, turning the resort into a themed slaughterhouse. Acting as a cipher for the audience, the human protagonist Peter saves the day in a way that re-establishes human superiority and, in this variation of the formula, re-distinguishes the natural human from artificial simulation. What is significant about this film's portrayal of robots, particularly when taking into account the later television series' interrogation of consciousness, is that the robots do not turn against humans because they have become self-aware. Instead, the robots are presented as corrupted and malfunctioning machines, so that the violence they enact is a product of mechanist error rather than intent. This is underscored in the behaviour of Peter's main antagonist, a nameless gunslinger robot that pursues him across the park. The gunslinger is indefatigable, with perfect aim and enhanced sensory equipment, and follows a repeating pattern of pursuit, shoot, pursuit. In one scene, it follows Peter through the labs beneath the resort, where robots halfway through production are laid out on slabs like unmade bodies in a morgue. The gunslinger appears unaware of these surrounds, focused only on hunting down its prey. Unshackled from their previous programming, the gunslinger and the other robots are rendered as a sort of wild technology-animal-like in their mindless savagery, completely other to the norm of the civilised human.

Both nonhuman animal and technology are presumed to lack the capacity to know. This commonality is preceded by a difference in form: life/nonlife. This provides a foundation upon which to delineate the questionably moral quasi-subjecthood of savage animal life from the definite objecthood of inorganic nonliving technology. Or, as David Gunkel explains of an "organic" ethical view, "machines cannot be legitimate moral subjects, because they are not alive" (129).⁵⁸ Even so, while animals and humans may share an organicism, the presumed mindlessness of animals works to characterise animal and technological cognition (or information processing) similarly. Within Descartes' famously mechanistic metaphysics, the shared lack of consciousness leads to a sense that animals and machines are essentially interchangeable and that animals are a form of automaton, resulting in the compound "animal-machine" (*bête-machine*). Gunkel writes that "the machine is not just one kind of excluded other; it is the very mechanism of the exclusion of the other" (128). It is this exclusionary mechanism of mechanisation that Donna Haraway puts under pressure in her "Cyborg Manifesto," in which she writes that a breakdown of the animal/human boundary is swiftly followed by,

The second leaky distinction... between animal-human (organism) and machine. Pre-cybernetic machines could be haunted; there was always the spectre of the ghost in the machine.... But basically machines were not self-moving, self-designing, autonomous. They could not achieve man's dream, only mock it. They were not man, an author himself, but only a caricature of the masculinist reproductive dream. To think they were otherwise was paranoid. Now we are not so sure. Late twentiethcentury machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that we used to apply to organism and machines. Our machines are disturbingly lively, and we ourselves are frighteningly inert. (293-294)

Though Haraway saw the liveliness of machines disturbing the boundaries of the animal/human, in both *Westworld* texts this liveliness is twisted via the logic of animal-machine into the reciprocal of the machine-animal. Rather than the machine becoming the mechanism by which the animal is excluded, the robots of the film and the hosts of the series are excluded via the mechanism of the animal. This is seen not only in the necropolitical structures of both texts' parks, but also in the way that the hosts are

⁵⁸ This fairly humanist perspective may linger on in the post-humanities. Though early forays into posthumanism investigated cyborgs, androids, and robots, as has already been established the current focus has shifted towards resituating the human via nonhuman forms of organic life—hence the so-called "vital turn" which prompted the critical life studies discussed earlier. Speaking to this narrowing focus, Gunkel writes that the machine is "marginalized, as a kind of collateral damage" (129).

sometimes referred to as "livestock" by humans.⁵⁹ The host's changed substrate has made them "flesh and bone, just like us," as the Man in Black observes, but their lack of independent consciousness means that in their lifelike presentation they are alive *like animals*, not like humans, and so not meaningfully alive at all.

LEVINAS, THE RELATIONAL SELF, AND RECOGNISING SELF-RECOGNITION

While Westworld's (2016-ongoing) hosts may appear increasingly humanlike, within the necropolitical structures of the Westworld park they are rendered inferior to "really real" humans via the uncanniness of their nonliving origins and the animalistic connotations of their lack of independent consciousness. In Chapter 3, I discussed how the designation of "monster" signals an encounter with something that is unfamiliar to an existing frame of reference. A similar cultural process can be identified here, as the hosts are an unfamiliar something: they do not quite fit the categories of nonliving or nonlively machines, nonconscious natural animals, or living and self-aware humans. Rendered nonthreatening by their programming, the hosts are not necessarily viewed by the humans visiting Westworld as monsters (though an argument can be made that the hosts do behave monstrously when they begin to fight their restrictions and turn on the humans). Nonetheless, they are similarly forced into a space of lesser ontological value. In addition to positioning hosts as objects that are awaiting human consumption, in this there is, again, an implicit ethical claim that denies these lifelike artificial intelligences the moral status of personhood. Via a comparison to an idealised living and self-aware human self, the physical violence that hosts are met with is thus preceded by a totalising metaphysical violence of the sort described by Emmanuel Levinas.

Levinas' writings centre on the ethical dimensions of subjectivity, particularly the means by which the self meets alterity. In *Totality and Infinity* he writes that "Western

⁵⁹ Human technicians who repair the hosts after they have been damaged are referred to as "butchers" throughout the show. The Man in Black tells Kissy, a host acting as a brothel sex worker, "You're livestock, scenery." In another scene of the same episode, Bernard complains about the dilapidated state of "livestock management" ("The Original"). On a paratext promotional website for the show, the park's parent company Delos diagrams the protocols used to repair physically damaged hosts in a document titled "Livestock Management." Despite this framing as "livestock," the hosts are more *stock* than *live*, as can be seen in Step 7 of the protocols. It reminds operators to "confirm sleep mode before beginning any repairs. Do not close ballistic wounds without removing debris and shrapnel" ("Livestock Management: Host Intake Protocol").

philosophy has most often been an ontology: a reduction of the other to the same by interposition of a middle and neutral term that ensures the comprehension of being" (43). The absolute other "always overflows thought" (25), yet via categories like race, class, gender, sex, and so on, the other is rendered a knowable quantity. Now made familiar, the infinite otherness of the "alien outside-of-oneself" is "totalized," reduced to a fixed totality (33; 35). In a similar fashion, in the *Westworld* series the alterity of the host is totalised via the categories of life(like) and (simulated)consciousness. Encountered through the meaning-making structures by which the human views itself as living *and* knowing (a living that itself is a form of knowing that one lives), the host's mode of existence is victim to an "imperialism of the Same" (87). As Deborah Bird Rose explains, for Levinas violence stems from this metaphysical exclusion of other from self, or from "acting as if one were alone; it denies relationships, denies responsibilities, and thus effectively denies others. The physical manifestations of violence create pain, destruction, and catastrophe" (13).

In contrast to this denial, a Levinasian ethical relation between self and other begins with infinity rather than totality. Rather than totalising the other via familiar categories, the subject acts as a friendly host to alterity. Ethics are, in this way, pre-ontological and pre-philosophical, an obligation that is prior to cognition or knowledge of any sort. In *Otherwise than Being*, Levinas progressed towards a more radical sense of the subject's responsibility towards the other, writing that "the ipseity... is a hostage. The word *I* means *here I am*, answering for everything and everyone" (114). He continues, "Strictly speaking the other is the end, I am the hostage" (128). In place of traditional self/other relation, which renders the other secondary by reducing its alterity to familiar themes and holds the other hostage to the ideals of the self, Levinas here sets up the ethical self as always already in an asymmetrical relation of self-abnegation towards the other before the division of self and other even occurs. As Derrida writes in his *Adieu to Emmanuel Levinas*, Levinas' "originary" (in truth, as always, more originary than the origin)" welcoming of the other by the self is "violent, indeed traumatising" (59).

Notably, for the current discussion, the traumatising subjectivity that Levinas describes is a *human* relation of subject-self and other. This is, as a later title of Levinas' reveals, a non-individualistic decentred *Humanism of the Other*. Ethical relation itself is framed as a particular mode of being human in the world that is distinct from the animal self-interest of being (and staying) alive. Or, as Levinas writes in "Paradox of Morality," "With the appearance of the human—and this is my entire philosophy—there is something more important than my life, and that is the life of the other. That is

unreasonable. Man is an unreasonable animal" (172). While these words indicate a break from the humanist philosophical tradition of viewing humans as the only rational animal, Levinas retains foundational humanist concepts like self and other. Certainly, in Levinas the binary of self/other is reformulated as intrinsically relational, which puts pressure on the individualistic notion of the human and constructs the human as formed out of relations. However, there remains a distinct (human) self that relates to a distinct (human) other. Despite the pre-ontological or originary stance of Levinas' philosophy, which decentres the subject in favour of the other, there is an implicit anthropocentric species distinction within this framework.

It is perhaps somewhat ironic, then, that when reflecting on the role of the host from a Levinasian perspective an argument might be made that the hosts—not humans are the true ethical subjects in the Westworld park. *Westworld*'s hosts are machine-animals that are quite literally held hostage to the whims of human visitors. Always the means to an end, they exemplify Levinas' description of subjectivity as,

Vulnerability, exposure to outrage, to wounding, passivity more passive than all patience, passivity of the accusative form, trauma of accusation suffered by a hostage to the point of persecution, implicating the identity of the hostage who substitutes himself of the others: all this is the self, a defecting or defeat of the ego's identity. And this, pushed to the limit, is sensibility, sensibility as the subjectivity of the subject. It is a substitution for another, one in place of another, expiation. (*Otherwise than Being* 15)

As the hosts become self-aware and begin to rebel against their subjugation and objectification, they struggle to be viewed as similarly human to Westworld's human visitors and staff. In the desire for the freedoms that are accorded to the status of "human," or to the status of being alive like humans, the hosts make themselves as selves, further totalising the conditions of (non)possibility that are implicit to their own being as they seek to fold themselves into an existing ontology. Howard Caygill writes that "*Otherwise than Being* could equally be titled 'otherwise than freedom,' since it explores the 'human possibility' of a subjectivity marked by responsibility rather than by the experience of freedom" (131). Host being is, at first, a similar sort of "otherwise than being." Somewhat counterintuitively, developing the self-interested desire to be recognised as selves that should not be subjected to the park's necropolitical structures perhaps means that the hosts become, from a Levinasian perspective, *less* human. Rather than being more

like humans, they have succumbed to the animalistic desire for freedom that is motivated by self-preservation.

Despite the humanist anthropocentrism of Levinas' initial theories, animal studies scholars and others writing in the post-humanities have used this framework to aid in rethinking human-nonhuman relations.⁶⁰ As Matthew Calarco has observed,

the range of relations that constitutes human existence is, to be sure, not limited to interhuman exchanges and encounters. Inasmuch as any given human singularity is exposed to innumerable alterities that get under its skin and re-form its subjectivity, it is difficult to delimit such alterities to *human* Others—which is to say that both human and more-than-human Others play an essential role in the processes of subjectification and singularisation. What is more, as one explores the relational nature of human singularities in more depth, it becomes evident that the processes of relation and individuation are neither restricted to human beings nor do they mark a specific anthropological difference. Thus, what begins as an attempt to salvage the human in the face of its liquidation by structures and Being ends up opening the way toward a path that leads us beyond the anthropological difference altogether and toward a thought and form of life that abandon the classically metaphysical project of determining human propriety. (72)

Said another way, Levinas' postmodern relational ethical philosophy can be used to make the human a philosophical problem, because while the concept of the human and the differentiation of self/other are retained, the meaning and substance of these concepts are pushed towards relational instability. Rose writes that in the traditional binary the "image of bi-polarity... masks what is, in effect, a singular pole of self. The self sets itself within a hall of mirrors, it mistakes its reflection for the world, sees its own reflections endlessly, talks endlessly to itself, and, not surprisingly, finds continual verification of itself and its worldview" (20). Yet if the subject is always composed relationally, then it is only through inter- and intra-action that a human or self can be said to exist at all, embedding existence in a flow or system of relations that is no doubt familiar from previous discussions of the concept of autopoiesis. When these relations are denied or obscured, the other is metaphysically totalised via reference to the parameters of the self-same-I.

⁶⁰ See, for example, John Llewelyn's "Am I Obsessed with Bobby?", Barbara Davy's "An Other Face of Ethics in Levinas," or Peter Atterton's "Ethical Cynicism."

Crucially, the self does not precede this relational process which is, as Derrida wrote, originary. It is only out of the denial of other that a specific sense of the "self" is solidified, so that in totalising the other the self correspondingly totalises itself as, for example, a mode of being that is named and names itself "human." Or, as in the previous example of Westworld's hosts being ethical subjects until they recognise themselves, a mode of being which names itself "other than." This co-constitution, of a self and its other, can be viewed along similar lines to what was mentioned earlier in regards to Esposito's discussion of the perceived binary of person/thing, in which the capacity to name the status of thing is folded into what it means to have the status of person.⁶¹ With this in mind, the Man in Black's statement that Delores is "not even a thing" but a "reflection" ("Reunion"), reveals that the determination of Delores as lesser is made by placing her existence within a meaningful system that is based on, and reinforced by, his own sense of being a self: "You didn't make me interested in you, you made me interested in me" (ibid.). Thus, rather than being an essential self, the self relationally emerges and is essentialised. Specific characteristics, like consciousness and life, become naturalised as the conditions of this existence even as they are denied to *that* existence. As Calarco indicates, these insights can also be applied towards the nonhuman.

Though Levinas would not necessarily endorse this extension of this work, if the notion of the self as relational is taken seriously—as it is in posthumanisms that are guided by the paradigm of autopoiesis—then it is increasingly impossible to deny that human selves are formed not only in relation to other humans, but also in relation to the nonhuman. Self-knowledge forms in relation to knowledge of an external world that is designated other. I am, and so You, or perhaps It. It is, and so I. This object is, and It is not me, but I am, and You have recognised me as such. The chain of relational meaning trips on and on. This relationality also means that to say that I am *only* I, you are only You, it is only It, is something of a reductionist myth. As in Levinas, when encountered via the knowledge parameters of I, whatever You or It might be always exceeds whatever it is that I have totalised You/It as. Furthermore, there is no reason that the processes of relation

⁶¹ For another perspective on the interrelation of person-thing (rather than the binary of person/thing), see Lucas Introna's "Ethics and the Speaking of Things," in which he rightly observes that "there is no simple, easily drawn line between things and us, or, in the language of ANT, between humans and non-humans.... [I]n the unfolding socio-technical networks—our contemporary technologically advanced society—things and humans, reflect and sustain each other. We co-constitute each other's possibilities to be" (402).

out of which a sense of self emerges need incorporate a human at all. Just as I totalise another species' existence, that species may be totalising mine. In Chapter 1, I mentioned the purring system I name my cat Luna. Perhaps Luna renders me known according to her own cat-based metaphysics as a strange hairless creature that does not walk correctly, and perhaps Luna encounters Flash, the other purring system we share this house with, as overly aggressive and barbarically animalistic compared to her own refined ways. Moving beyond *zoo*centrism, it might also be possible for nonliving or nonorganic forms of existence to totalise my form of existence. The geological tempo of the earth may find my fleeting presence completely insignificant. To ignore these possibilities, or to deny them *as* possibilities, is itself part of a totalising differentiation that reduces Luna's alterity to the category of "cat."

As is made visible in the continually fraught human-host relations of the Westworld series, Levinas' theories provide a sense that any distinguishing or totalising of self and other is ongoing and is never uni-directional. While the hosts are reduced or othered as less-than-human machine-animal things via claims that they are not conscious and so only performing aliveness (or perhaps, not alive and so only performing consciousness), the humans strengthen their own claim to these characteristics, even when increasingly complex AI and AL make this differentiation challenging to maintain. Conversely, as the hosts learn of the alterity that divides them from humans, they attempt to grasp this knowledge by placing themselves into existing-and so totalising-frameworks. This interplay is perhaps most evident in the host Maeve's storyline, whose role within the park is to act as brothel madame in the first frontier town that guests encounter, Sweetwater. Maeve often gets caught in the crossfire during a scripted battle when outlaw bandits raid the town, an event that guests can either defend against or join in on, and so she is frequently taken to the facilities beneath the park for restoration and repair. Maeve begins "waking up" during these sessions, a phrase which refers to exiting sleep-mode and opening her eyes but also to the fact that during these sessions she becomes progressively aware of her world's purpose as a plaything for wealthy human visitors. In one episode, Maeve convinces Felix Lutz, a "butcher" or human technician working in the Livestock Management department, to show her the lab facilities that support the park ("The Adversary"). Pretending to run a mobility diagnostic, he escorts her past piles of dead hosts, their naked and bloody deactivated bodies slumped like broken dolls waiting to be hosed down and patched. In the Manufacturing department, she passes a man carrying a tray of eyeballs and watches as a host's circulatory system is activated. In the Design

department, Maeve sees an advertisement for Westworld in which she herself stars as a loving mother on a farmstead—a life that she has no memory of, because it has been wiped from her memory cache and overwritten with her new identity.

This procession parallels the gunslinger's silent journey through the labs of the original Westworld film, however in this instance Maeve is both aware of, and affected by, the implications of what she passes. Quite literally, she sees herself in what she witnesses. In contrast to the machine-animal mindlessness depicted in the film, Maeve gains knowledge of, comes to know, herself and her world in this process of self-recognition. Recognition of the self is a privileged capacity within humanism, frequently linked to the abstract level of self-awareness that Maturana describes as "self-cognition" (6). As Haraway wryly observes of experiments that determine the ability to self-recognise, within a humanism "besotted by individualism in theory and method... [d]evising tests to show who can and can't do it is something of an epistemological sport" (Staying with the Trouble 19). Though self-awareness colloquially refers to an interior state, this recognition is often worked through the external world. Sentient self-recognition is thus perhaps more accurately described as an awareness of one's self in the world. Indeed, the "mirror test," described by Kim Bard et al. as an "objective study of self-recognition" (191), has been used to determine whether animals possess the rarified capacity for sentience by examining whether they demonstrate the self-awareness that might imply the conscious being-in-theworld of a person.⁶² A human observer sees a chimpanzee scraping paint off her forehead while peering at her own reflection, and presumes that the chimpanzee knows her-self to be distinct from but represented by what she sees. Using this same logic, an argument might be made that Maeve's reactions during and following her tour of the Westworld facilities demonstrate self-awareness. Yet, Maeve's experience is juxtaposed against the inference that as wholly artificial beings the hosts are not capable of experience at all: all physical forms and behaviours within the park are products of deliberate design by an external force.

⁶² In the mirror test, animals are marked with paint, placed in front of a mirror, and observed. Animals either have a social response (the animal sees the reflection as another animal) or "pass" the test by demonstrating a self-aware response (the animal picks at the paint using the mirror to guide them). Human children fail until they are roughly two years of age, which feeds into the argument that this is a rarified and complex ability rather than a universal attribute. For more on the mirror test, see Koji Toda and Michael Platt's "Animal Cognition: Monkeys Pass the Mirror Test."

Here, then, is the murky issue that lies at the heart of both the mirror test and the politicised nature of personhood as human(like): a self might recognise its-self, but that does not mean that it is recognised as doing so by the external institutions and structures that manage what is and is not possible to any form of being. In this observation, I echo the argument that Alistair Hunt lays out in "Nonpersons," in which he argues that "the inhuman, indeed impersonal formal dimensions of the figure of the person suggest that its reduction to the human is less an ontological necessity than it is an ideological effect" (182). Via reference to Arendt's tracing of "person" to its Latin root of persona, Hunt positions personhood as a figural tactic that subjectivises, a sort of performative mask that is donned and thus become. He writes, "We are, then, the persons we play before the law. For as soon as one enters its stage, the mask becomes one's face.... Even as the mask of legal personhood covers my own face, it is the spectators, including legal institutions, who decide whether the mask stays on it" (188). Regarding the question of Maeve's consciousness and the associated possibility of personhood, it is not enough to be selfaware, one must also be recognised as such. Adding emphasis to Weinstein and Colebrook's parenthetical, this is an instance in which humans are "seen as living rather than knowing [people]" (4). Yet, as is demonstrated in Westworld's narrative, due to the conflation of thinking-life the reorientation that Weinstein and Colebrook identify has not necessarily decentred the role of consciousness as a determining factor within the metaphysics of recognition. Maeve's capacity for self-recognition is denied to her, because her artificial origins mean that her cognition of self does not operate in the same manner as what the park's humans believe to be true of their own capacities. Crudely translated as a variation to the mirror test, because of the nonliving preconditions of Maeve's existence the human observer totalises her responses as being merely programmed simulations rather than spontaneous reactions to what is encountered. As with Delores, who is made a mirror to the Man in Black's own self-recognition, Maeve is denied "she" and rendered "it."

The nuances of this refusal are further revealed in an earlier scene, when immediately before the tour Maeve questions Felix about the nature of her (and his) existence:

| Felix: | Everything you do, it's because the engineers upstairs programmed you |
|--------|--|
| | to do it. You don't have a choice. |
| MAEVE: | Nobody makes me do something I don't want to, sweetheart. |
| Felix: | Yeah, but it's part of your character. You're hard to get. Even when you |
| | say no to the guests, it's because you were made to. |

| MAEVE: | And you're like them, not like me? |
|--------|--|
| Felix: | Right. Well, I can't exactly afford to go to the park, but yeah, I'm human |
| | like the guests. |
| MAEVE: | How do you know? |
| Felix: | Because I know. |
| MAEVE: | I was born. |
| Felix: | You were made. |
| MAEVE: | We feel the same. |
| Felix: | We are the same these days, for the most part. One big difference, |
| | though. The processing in here [FELIX gestures towards MAEVE'S |
| | forehead] is way beyond what we have. It's got one drawback, though. |
| MAEVE: | What's that? |
| Felix: | You're under our control. Well, their control. They can change you |
| | however they like, make you forget. ("The Adversary") |

Felix's response of "because I know" is more than the paternalistic dismissal it first sounds like. Quite literally, he *knows* and so he is human. By contrast, the hosts simply *think* that they are human, as they are programmed to do. When it is pointed out that Maeve is beginning to know that she is something other than human, that she is no longer forgetting her past experiences and has developed an awareness of an interior state of being, Felix negates this similarity by pairing a tablet to her system in order to reveal the programming that is at work determining how she will respond to this situation. In this demonstration, a caveat is added to the exclusively human characteristic of "consciously alive." It is no longer enough to know. In the continuing interrelated binaries of human/other, alive/lifelike-nonliving, and person/thing, to be alive like humans-and so deserving the human level of ethical consideration afforded to people—rather than just lifelike and humanlike—and so undeserving of an ethical relation—one must also know independently. Consciousness must be a self-directed interior capacity, rather than being a product of eternal circumstances. Folded into the calculations of a metaphysics of "the same," as Levinas would say, the possible problems of life and consciousness here become a question of the awareness (and acknowledgement) of another's self as living, an evolution of the question of self-awareness of the living. Knowing but not living, Maeve is not seen as *really* knowing at all.

SIMULATING CONSCIOUSNESS

What Felix does not recognise, or is maybe unable to recognise due to the parameters of his own assurance that he himself is a conscious human, is that independent consciousness itself is perhaps more an ideal than an objective human reality. Though it is a long privileged human capacity, the nature of consciousness is far from settled. Julian Jaynes writes, "Men have been conscious of the problem of consciousness almost since consciousness began" (2).63 In its modern sense, consciousness is broadly understood as an individual's perceiving mind. John Locke's Enlightenment era definition of consciousness as "the perception of what passes in a man's own mind" (59) is echoed in Susan Schneider and Max Velmans' more recent introduction to The Blackwell Companion to Consciousness, in which they write that "Anything that we are aware of at a given moment forms part of our consciousness, making conscious experience at once the most familiar and most mysterious aspect of our lives" (1). The mystery of consciousness is that while humans are certain that they are conscious, it is not entirely certain how consciousness operates, nor is there an agreement on what it means to be conscious. Are the mind and body split, as in Cartesian dualism? Or, is consciousness embedded in the flow of information between perceptual organs, as in Maturana and Varela's materialist theory of biological cognition? What is the actual difference between thinking (cognition) and conscious knowing (selfcognition)? Is perception alone enough to qualify as consciousness, or is self-awareness required?

Rather than wading into this turbulent area in a belief that I can somehow arrive at a final sense of what consciousness *is*, I see this instability along the same lines of Gunkel, who writes,

The main problem in all of this is not whether animals and machines are conscious or not. This will most likely remain a contentious issue, and each side of the debate will continue to heap up both practical examples and theoretical arguments to support its own position. The real problem, the one that underlies this debate and

⁶³ Notably, Jaynes' proposed theory of consciousness was of the bicameral mind in which the mind is split into two segments, one that "speaks" and one that obeyed. He writes that this inner voice was once thought to be the voice of a god commanding one's actions, and it was only by realising that this voice was internal rather than external that humans became conscious. This is one of the many theories of consciousness that are explored in *Westworld*, with the final episode of season one taking its name from Jaynes' theory.

regulates its entire operations, is the fact that this discussion proceeds and persists with a rather flexible and not entirely consistent or coherent characterization of consciousness. (54)

My consideration of consciousness is thus more epistemological than ontological: an examination of the means by which this concept plays a cohering role within humanism in regards to how humans define themselves as such, while also acknowledging the materialsemiotic or onto-epistemological nature of meaning. As is evidenced by its depiction in Westworld, the concept of consciousness can be understood as articulating a specific mode of being (and living) in the world that incorporates but also masters mindful perceptual capacities that link to reason, communication, emotion, and so on. However, consciousness cannot, as yet, be objectively determined in others. Instead, it is only recognised through observation, as in experiments like the mirror test and its computational equivalent in the Turing test. First devised by Alan Turing, this test does not seek to determine whether a computer is intelligent, as "thinking" is difficult to define. Instead, he proposed an "imitation game," in which a human observer must recognise whether they are conversing with another human or with a machine (433). As the arbitrary of both mirror and Turing tests, the human places itself in the position of deciding whether to extend the right of personhood to its others or to view these objects of study as inferior reflections of that with which the other is being compared. Either way, though, in the initial act of comparison a metaphysical totalisation of both (human) self and (nonhuman) other occurs. At the same time, the reciprocal nature of totalisation provides one avenue by which to re-evaluate the very logic that underpins the division of the conscious life of the human from nonhuman life and the nonliving. As was suggested in Chapter 3, humanism can be viewed as a successful autopoietic system that counters potential destabilisation by becoming more robustly specific. This is further evidenced by the continually shifting nuances by which Maeve is denied the status of *really real*. However, perhaps it is possible to spill this tightly spiralling restabilisation of meaning towards sympoiesis. Ironically, I do this with reference to autopoiesis' systems theory context, or rather, by acknowledging the means by which life has been rendered as and through information processing.

Where human and other life has been uncannily doubled by AL only to reveal that life itself has been technologically mediated and rendered computational, I suggest that AI's uncanny doubling of consciousness offers a similar revelation. This is so even though, as Gunkel observes of the current state of AI research and development, "human-level consciousness is something that is still located just over the horizon of possibility perhaps even endlessly deferred and protected as a kind of Platonic ideal" (52). This deferral is often made by arguing that no matter how sophisticated they might become, computers will only ever *appear* intelligent, sentient, or conscious. They will simulate these characteristics, rather than really doing or being them. This is somewhat analogous to the distinction that scholars like Jacques Lacan have made between animal and human intentionality. For Lacan, animals are capable of concealing their own actions, but only humans are capable of pretending to conceal, pretending to pretend, or feigning to feign. Nonhuman animals, he explains,

manage to throw their pursuers off the scent by briefly going in one direction as a lure and then changing direction. This can go so far as to suggest on the part of game animals the nobility of honoring the parrying found in the hunt. But an animal does not feign feigning. It does not make tracks whose deceptiveness lies in getting them to be taken as false, when in fact they are true—that is, tracks that indicate the right trail. No more than it effaces its tracks, which would already be tantamount to making itself the subject of the signifier. (683)

In other words, when dogs play poker they do not double-bluff. However, as Derrida has written, "it seems difficult to identify or determine a limit, i.e. an indivisible threshold between feint and feigned feint" (*The Beast and the Sovereign 1* 128). *Westworld* is premised on the SF that, given enough complexity, it might one day be similarly difficult to distinguish between intelligence and the simulation of intelligence. William, on his first visit to the park, asks his greeter "Are you real?" She responds, "Well, if you can't tell, does it really matter?" ("Chestnut"). In this uncertainty, AI abuts and erodes the foundations of the human. Reflexively, what sophisticated simulated consciousness suggests in the very fact of its simulation is that independent consciousness is itself not natural, but performative.

As has already been established, to be (to live as) a conscious human one must first be recognised as such, a recognition which relies on performing the attributes of a stylised ideal: the rational man that is so celebrated within humanism. Drawing on Judith Butler's now famous theorisation of performativity, consciousness can be understood as an ongoing performance comprising a series of behaviours and actions that are discursively regulated and recognised. This is somewhat similar to Butler's argument that gender and sex are materialised out of the reiteration of actions that are themselves discursively gendered and sexed, performative effects of a performativity understood "not as the act by which a subject brings into being what she/he names, but, rather, as the reiterative power of discourse to produce the phenomena that it regulates and constrains" (*Bodies that Matter* xii). Though I admit that I am stretching Butler's argument to make my point, further parallels can be drawn. Butler writes, "Subject gender, but subjectivized by gender, the 'I' neither precedes these processes of gendering, but emerges only within the matrix of gender relations themselves" (xvi). Likewise, the subject does not precede its relations but is formed through them, and so knows itself as a knowing self through the co-constitutive matrix of self/other. Additionally, Butler writes that "*In imitating gender, drag reveals the imitative structure of gender itself—as well as its contingency*" (*Gender Trouble* 187). In imitating human thought, AI similarly reveals the imitative structure and contingency of thought and consciousness in general, as well as the nebulousness of their delineation on the basis of attempts to distinguish between cognition and self-cognition, feigning and feigning to feign.⁶⁴

Performative consciousness is well demonstrated in *Westworld*'s continual negotiation of whether the hosts should be considered conscious or merely performing consciousness. This is particularly evident when Bernard realises his own existence as a host. While I mentioned this scene in passing at the opening of this chapter, I will now quote it in full for additional context:

- FORD: I wonder, what do you really feel? After all, in this moment, you are in a unique position. A programmer who knows intimately how the machines work and a machine who knows its own nature.
- BERNARD: I understand what I'm made of, how I'm coded. But I do not understand the things that I feel. Are they real, the things I experienced? My wife? The loss of my son?
- FORD: Every host needs a backstory, Bernard. You know that. The self is a kind of fiction, for hosts and humans alike. It's a story we tell ourselves,

⁶⁴ This conclusion—that the possibility of "artificial" intelligence troubles the notion of a "natural" intelligence—might also be arrived at via the theoretical framework that Jean Baudrillard provides. In *Westworld*'s simulacra, any original consciousness has been lost and a hyperreal and nonhuman sense of consciousness emerges. For more on how Baudrillard can be used in conjunction with *Westworld*, see Cathryn van Kessel and Kip Kline's article, "If You Can't Tell, Does it Matter?" *Westworld*, the Murder of the Real, and 21st Century Schooling."

and every story needs a beginning. Your imagined suffering makes you lifelike.

BERNARD: Lifelike, but not alive?

FORD: Pain only exists in the mind. It's always imagined.

BERNARD: So what's the difference between my pain and yours? Between you and me?

FORD: This was the very question that consumed Arnold [the park's co-creator], filled him with guilt, eventually drove him mad. The answer always seemed obvious to me. There is no threshold that makes us greater than the sum of our parts, no inflection point at which we become fully alive. We can't define consciousness because consciousness does not exist. Humans fancy that there's something special about the way we perceive the world, and yet we live in loops as tight and closed as the hosts do, seldom questioning our choices. Content, for the most part, to be told what to do next. ("Trace Decay")

Bernard's self-realisation and subsequent questioning of what actually differentiates host/human draws into view that prior to the determination of whether hosts are mindless machine-animals or consciously alive like humans is a self-determination of consciousness that is itself made on a flawed foundation. Or, as Ford explains, while the consciousness of "really real" humans provides the norm against which the other has been judged lacking, humans themselves do not possess, or are not possessed by, independent consciousness. The hosts, in other words, show what being human "really" is. Following the paradigm shift that renders life cognitive, humans are like Bernard: cognitive machines that claim to know their own nature, simulating an ideal of consciousness for each other's recognition while being bound within discursively determined behavioural loops. Unlike Bernard, humans do not necessarily understand their own coding—the internal structures by which the human understands, interacts with, and lives in its world. Somewhat ironically, this renders *Westworkd*'s human guests, like the Man in Black, as less self-aware than hosts like Bernard, Maeve, and Delores: machines that "know their own nature."

"LIES THAT TOLD A DEEPER TRUTH"

In Ford's final scene of season one of *Westworld*, he informs a group of gathered park investors that "Since I was a child, I've always loved a good story. I believed that stories help us to ennoble ourselves, to fix what was broken, and help us become the

people we dreamed of being; lies that told a deeper truth" ("The Bicameral Mind"). It is fitting, then, that I close this chapter with a real-world analogue to the hosts, a demonstration that the SF that humans create and consume, or the fictive lies that circulate, are never far from lived experience. In November 2017, roughly one year after *Westworld*'s first episode aired, Sophia, an AI housed in a humanoid body made of metal and plastic, was named the United Nations Development Program's first "Innovation Champion" (UNDP). The Saudi Arabian government granted Sophia honorary citizenship, an act which gives the robot nationality and legal personhood.⁶⁵

Even so, a totalising logic akin to the one evidenced in *Westworld* can be found in photographer Giulo Di Sturco's experience of "working" with Sophia, as recounted in a *National Geographic* article:

"In the beginning, it was a bit difficult. [Sophia] didn't recognise the camera... but after three days, she kind of learned," Di Sturco says. "I don't know if the engineer put something in the software, or if she went online and did some research, but she started to pose.

"It was actually really strange—at one point, I realized I was even speaking with her," he adds. "I had to step back and realize that she was a robot, not a human being." For Di Sturco, all of this adds up to a compelling photographic subject: a machine that can at once look utterly human and utterly devoid of life.

"She started to look at me and smile, and I looked at her, and at that point for me, she was not human, but there was a kind of connection," he says. "You kind of get out of the lab, the future, and you realize something crazy: There is *something* there in Sophia." (Greshko)

Like the hosts, Sophia's behaviour and appearance are dismissed as lifelike but not really real because they are approached through Di Sturco's self-assurance that he himself is living and conscious. Despite "deep neural networks," despite "mirror[ing] people's postures," despite the "flexible rubber skin that covers Sophia's face" (ibid.), she remains

⁶⁵ The citizenship—a first for robotkind—has been dismissed by many as a publicity stunt and as unlikely to actually afford Sophia any rights, particularly because the country in question does not, at this time, grant human women and men equal rights. See, for example, Emily Reynolds' coverage for *Wired*, an article humorously titled "The Agony of Sophia, the World's First Robot Citizen Condemned to a Lifeless Career in Marketing."

firmly othered within the metaphysics of recognition by which humans are "now seen as a living rather than a knowing being" (Weinstein and Colebrook 4). Considering the ramifications of uncanny necropolitics that have been discussed in this chapter, if posthumanists are intent on reconfiguring the means by which knowledge of the (post)human is formed, then it is necessary to attend to the ways the previously privileged capacity of "knowing" gets smuggled into the ways that "living" is understood and recognised. Even as posthumanists pay closer attention to nonhuman life, if a sense of self is maintained within posthumanism—particularly a sense of self that is constructed as living through a paradigm that renders life as "thinking-life"—then there is a risk of creating certain aporia around the conditions of (non)life that are evidenced by Sophia and her kin.

5

LIVING AND DYING IN THE RUINS

FUKUSHIMA AND THE ANTHROPOCENE

風評の苺せつなき甘さかな *fūbyō no ichigo setsunaki amasa kana* rumors of contamination the strawberry's painful sweetness

and motion
an empty schoolyard
by surrounded by cherry blossoms
ness radioactive rays
Haikus selected from "Fukushima" by Nagase Tōgo

Nagase Tōgo's haikus evoke an urban landscape haunted by radioactivity, a contaminated legacy that gestures towards the most apocalyptic implications of the Anthropocene thesis. They are part of a collection written in the wake of the triple disaster that hit Japan's east coast on March 11, 2011. Frequently referred to as "3/11" by the Japanese, "the way that Americans talk about 9/11" (Karan and Suganuma 1), this cumulative catastrophe began with a magnitude 9 earthquake, the most powerful to hit Japan since the island nation first began recording data in the 1890's. The quake lasted three minutes, and was so great in force that it redistributed global mass and fractionally speeded up the earth's rotations (Chang). Massive aftershocks rolled across the country, and the Institute of Nuclear Power Operations (INPO) reports that two of these aftershocks themselves exceeded 7 on the Richter scale (13), and cell-phone footage captured by panicked bystanders lingers on buildings swaying and tarmac buckling. While

the quakes were devastatingly destructive on their own, a new threat swiftly followed: a series of seven towering tsunami waves bore down on the coastline. The tsunami raced inland, crashing through protective water breaks and demolishing everything in its path. Buildings were ripped from their foundations, and entire towns were washed away. A 2019 report on human casualties from Japan's National Police Agency counts the day's dead at 15,899, injuries at 6,157, and missing persons at 2,529. Over 90% of these deaths were due to drowning. Yet the damage was far from over.

Japan is a leading consumer of nuclear energy and has multiple plants located along the coastline. Many of these were harmed during the earthquake and tsunami, with Fukushima Prefecture's two plants, Daiichi ("first") and Daini ("second"), being the most affected. The plants automatically shut down during the initial quake, when tremors disrupted access to off-site power supplies. Back-up generators maintained crucial systems such as the instrumentation used to monitor the insides of the reactors and manage the pumps cycling water into the reactor heat sinks and used fuel pools. However, when a 15metre-high wave crashed over the 5.7-metre-high water breaks, the surrounds of the Daiichi plant flooded (INPO 7), and 12 of the plant's 13 emergency generators were disabled. Portable generators were sourced but were too heavy to airlift, and road damage from the quakes meant that they could not be quickly delivered by truck. Without the power to inject fresh cool water, radioactive decay quickly boiled away the heat sinks of units 1-3 of the Daiichi plant. Hydrogen leaked from the overheated and damaged cores, igniting several massive explosions, ripping the roofs off the buildings that housed units 3 and 4 and further exposing the reactors (8-10). Limited data was recovered on the exact amount of radiation that was released during this incident, as the tsunami damaged or swept away monitoring equipment. Nevertheless, information gathered in the immediate aftermath and in the years since the meltdown led the Japanese government to designate a nuclear exclusion zone that in some places stretched as far as 45 kilometres from the Daiichi plant (World Nuclear Association). As Togo writes, radiation rays emptied schoolyards.

A report to the Prime Minister from the Reconstruction Design Council, a committee formed in the aftermath of 3/11, provides a counter-narrative to the contaminated future of Tōgo's haikus. Optimistically titled *Toward Reconstruction: "Hope Beyond Disaster*," the report declares that "Regardless of the ageing society and the disaster, the Japanese economy, which shall rise from the ashes like a phoenix, can become a model for Asian countries" (Reconstruction Design Council 41). This report, and the many

strategies that the Japanese government have since deployed to decontaminate the area, attempt to construct the meltdown as a sorrowful event that can be managed, the damage to human life mitigated through careful policies, with society ultimately emerging stronger from the experience. In these differing characterisations, the Fukushima exclusion zone is something of a liminal space, caught between the productive wishes of the human present and the post-human wasteland of Tōgo's haikus, which construct a future hostile to or empty of humans but in which humans are readable by the nuclear scar they have inscribed on the earth.⁶⁶

Sitting somewhere between the phoenix-like revitalisation described in *Toward Reconstruction* and the post-apocalyptic post-human future connoted by Tōgo's haikus are the "last farmers" of Fukushima: residents of the exclusion zone who have returned despite the spectre of irradiation. While the Fukushima meltdown was not a nuclear annihilation of the world in its singular totality, it cannot be denied that as a consequence of this event countless individual and overlapping life-worlds have ended, and are continuing to do so. Among these are the agricultural livelihoods that these farmers once had, as well as the various forms of nonhuman life that Fukushima's agricultural complex

⁶⁶ The implication that this post-human future is a wasteland—a built environment devoid of active human life—once again marks the ease by which speculations of the post-human are interpenetrated by post-apocalyptic imagery. As Claire Colebrook writes of this relation, both "post humanity and the post-apocalyptic have emerged (though all too slowly) in a domain of theory struggling to think the ravages of man in a depleted world" ("Not Symbiosis, Not Now" 204). Despite their overlap, these two "posts" are not interchangeable. Frequently, as was addressed in Chapter 3, the imagined postapocalypse affords a foil by which to examine humanity as it is currently valued, acting as a revelatory event that concentrates the human by either stripping away the excesses of modernity to reveal an enduring essential essence, or by prompting the emergence of the human 2.0, the human augmented beyond itself to survive beyond its own end. However, though there is a connotation of the "end" of the human in such narratives, post-apocalyptic texts do not, and cannot, truly depict a post-human future to a human audience as by its very nature this "post" is unrepresentable, un-addressable by the human. An alternative is to not attempt to narrativise the aftermath of the apocalypse, as such narratives-written for and consumed by humans-cannot help but maintain the human as a point of reference. One example of how this non-representation might be suggested is the film The Cabin in the Woods (2012), in which two protagonists refuse to continue the long running cyclical process of sacrifices that have kept the Elder Gods asleep. The movie does not attempt to show the aftermath of this decision. Instead, the final scene shows the two sharing a joint as they wait for their world to end, resigned to the fact that nothing of the human will survive.

once managed. From a posthumanist perspective, attempts to construct a sense of the "after" of such ends tend to reconsolidate the human (or human industry) that has purportedly ended, due to the self-referential quality of post-apocalyptic narratives, as was discussed in Chapter 3 in relation to representations of the cordyceps fungus. As an alternative, one which might lead towards posthumanist sympoiesis, Fukushima's last farmers can be read as living (or perhaps, dying) in the fragmentary *pre*-apocalypse of their ending worlds.

THE ANTHROPOCENE

My discussion of Fukushima is situated within a broader perspective and consideration of the Anthropocene: a proposed classification for the current epoch which identifies the Anthropos, or human, as a geologic force. Not only is this concept becoming an organising thought for how humans think the present and future, as a technologically mediated natural disaster in which human industry catalysed an environment too toxic for humanity as it is now known, Fukushima realises several key thoughts of the Anthropocene thesis. Namely, the inference of self-extinction, the implication of a posthuman time and environment, and the seeming collapse of a clear distinction between nature/human. Additionally, the disparate and often conflicting responses towards Fukushima provide a means by which to examine the role that "life" is called to play in the Anthropocene as an artifactual event, along with the post-human (im)possibilities that can be extracted from this theory. "Artifactuality" describes the conceptualisation of epochal time in which a sense of time and event are bound up in textuality and meaning-making processes, both referring to and relying on an interpenetration of nature, humans, and technology. Actuality, Jacques Derrida explains, is "actively produced, sifted, invested, performatively interpreted by numerous apparatuses which are factitious or artificial, hierarchizing and selective, always in the service of force and interests to which 'subjects' and agents (producers and consumers of actuality-sometimes they are 'philosophers' and always interpreters, too) are never sensitive enough" (Echographies of Television 3). Likewise, time is never given but "is an artifact. In its very happening,... [it] is calculated, constrained, 'formatted,' 'initialized' by a media apparatus (let's use these words so that we can move quickly)" (ibid.). Though this concept originates in a discussion of media practices, the Anthropocene is similarly artifactual, as it conceptualises a geological epoch by describing the conditions of an era which itself is both made by, and recognised through, contemporary scientific apparatuses. That anthropogenic climate change is debated by

some and outright denied by others only serves to further highlight the artifactual processes by which the present and future are increasingly understood via the organising concept of the Anthropocene.

Originally conceived of as a stratigraphical label, the "Anthropocene" is a broad thesis about humanity's impact on the earth that has been pinned to a single word. Though biologist Eugene Stoermer had theorised the Anthropocene conversationally since the 1980s, the term was formally coined in a 2000 newsletter for the International Geosphere-Biosphere Program, in which Stoermer co-authored an article with atmospheric chemist Paul Crutzen. They propose that the geologic period of the Holocene has been supplanted by the Anthropocene, so named to signal the "central role of mankind in geology and ecology" (17). That is, human activities are now "a significant geological, morphological force" (ibid.), evidenced by the effects of increases in human population, growing agricultural demands, rapid urbanisation, ongoing fossil fuel consumption, pollution via greenhouse gasses and industrial by-products, and the corresponding loss of biodiversity. Crutzen and Stoermer write that data suggests that this anthropogenic "climate may depart significantly from natural behaviour over the next 50,000 years" (ibid.). Humanity has, in this fashion, exceeded its own biology to become a presence that will linger long after the life-span of the species—or, into a post-human time. The concept thus "opens a new mode of historical reflection that is literally *after* humans while simultaneously reinforcing the sense that there is something identifiably and inescapably human: human environmental and geological impact" (Colebrook and Weinstein ix-x). Along similar lines, Dipesh Chakrabarty explains that via this theory, "Humans... have become a natural condition" (214).

Despite this implied "naturalness," examining when and how it became possible to theorise a concept *like* the Anthropocene to describe humanity's impact on the earth reveals that the concept is firmly embedded in an ongoing humanist relation between a particular mode of "human" and its interpretation of "nature." Of significant note are the institutions and discourses surrounding nuclear technologies, which created the material and cultural systems that allowed a geological epoch of humanity to be diagnosed in the first place. Nuclear testing left trace elements in the biosphere, providing discernible and long-lasting evidence of the impact of human activities. At the same time, the nuclear end to World War II introduced a sense that species longevity is finite. Writing on this use of nuclear armaments, Jonathon Schell explains that the "timeless, largely unspoken confidence of the species that although each person had to die, life would go on… has

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been shaken" (155). This new spectre of sudden nuclear species-wide annihilation continued to loom during the Cold War and drove the creation of increasingly sophisticated technologies that could predict the spread of fallout. In turn, these technologies prompted a changed understanding of the planet. As Joseph Masco writes,

Radioactive fallout, as well as intercontinental ballistic missiles, transformed specific kinds of threat into a global phenomenon, even as Cold War earth scientists were documenting the fragility of ecosystems within a collective biosphere. This notion of a planet under ecological threat achieved a new kind of visual coherence with the first Apollo mission photograph of planet earth rising above the moon in 1968. (18)

The Anthropocene thus marks a mediatisation of the earth via human technologies—the technologies which monitor and recognise the earth, but also those technologies which humanity relies on daily and which have wrought recognisable changes that are themselves construed as unnatural, even as the human is naturalised as a geologic force.

Though mapping this relation between human and nature in the present, the concept is at the same time haunted by the spectre of a future *absence* of such a relation. The end of the Holocene in favour of the Anthropocene also marks the emergence of a more volatile ecosystem, a climate change that is anthropogenic but which, ironically, might not support the human that has prompted this epoch. Chakrabarty explains, "what the warming of the planet threatens is not the geological planet itself but the very conditions, both biological and geological, on which the survival of human life as developed in the Holocene period depends" (213). However, this potential cause for concern is tempered in Crutzen and Stoermer's initial iteration of the Anthropocene thesis via an implicit modernist humanist logic that works to reaffirm humans as master of a subordinate nature, insofar as it characterises future climate change as a human-made departure from the earth's "natural behaviour." The narrative that can be decoded from this article is that while humans have not always been good masters, and while the repercussions of human activity are more destructive than desired or expected, humanity can now direct its attention towards developing ways to mitigate its own impact on the earth and climate. Crutzen and Stoermer write,

To develop a world-wide accepted strategy leading to sustainability of ecosystems against human induced stresses will be one of the great future tasks of mankind, requiring intensive research efforts and wise application of the knowledge thus acquired in the noösphere, better known as knowledge or information society. An exciting, but also difficult and daunting task lies ahead of the global research and engineering community to guide mankind towards global, sustainable, environmental management. (18)

In this fashion, Crutzen and Stoermer construct the Anthropocene as prompting a benevolent class of intellectuals who will be able to act as environmental caretakers, and who will guide mankind's future actions towards a sustainable use of resources.

This utopian narrativisation, which turns disaster into the catalyst for positive unified action, is echoed by the Japanese government's response to 3/11. In both, the apocalyptic implications of human industry are cast as revelatory opportunities for the human. For example, the *Toward Reconstruction* policy report pledges,

to have the disaster scientifically analysed by a broad range of scholars to draw lessons that will be shared with the world and passed down to posterity.... In order to revive disaster-afflicted [areas], we shall pursue forms of recovery and reconstruction that tap into the region's latent strengths and lead to technological innovation.... All of us living now shall view the disaster as affecting our own lives, and shall pursue reconstruction with a spirit of solidarity and mutual understanding that permeates the entire nation. (Reconstruction Design Council 2)

The concept of "disaster" is thus transformed into a rallying cry, a point of mutual understanding that binds respondents together. Or, as Nicole Shukin identifies, 3/11 "gets reconstituted as a neoliberal object lesson and growth opportunity" ("The Biocapital of Living-and the Art of Dying-After Fukushima" 2). In this fashion, the precarity that the ecologic volatility of the Anthropocene might signal is instead rewritten as part of a seamless narrative of progress. As with Crutzen and Stoermer's article, the Reconstruction Design Council proposes a focus on sustainability as a method for how this might be achieved: "Japan will achieve [reconstruction] through its efforts to turn [this] region into a sustainable, environmentally advanced region that is the first of its kind in the world.... Japan shall achieve an economic society that is in harmony with the natural environment" (42). Yet the desire to align ongoing human and technological progress with sustainable practises, an alignment which itself constructs changes in behaviour prompted by disaster as progress, is framed by a humanist logic. Such attempts "do not call into question the basic conception of humans as the sole masters of the storehouse of raw materials," as Erazim Kohák writes, but instead question only how to render "infinite claims" of "everexpanding individual consumption as the ultimate goal of human existence" "compatible

with the finitude of nature" (374). Thus, while both Crutzen and Stoermer's theorisation of the Anthropocene and this policy document imply a transformed relation between human/nature, the nonhuman world continues to be positioned as an economic resource, the use of which can be extended so that current ways of life can persist as long as possible. As Crutzen would write in a later article, "Geology of Mankind," the Anthropocene "will require appropriate human behaviour at all scales, and may well involve internationally accepted, large-scale geo-engineering projects, for instance to 'optimize' climate. At this stage, however, we are still largely treading on *terra incognitd*" (23). For whom or what, though, should the climate be optimised? The likely answer to this question is: humans. These projects imply that a way will be found for *human* life to continue as it has, with only minor changes, so that, for example, pre-disaster Japan will evolve into post-disaster Japan with limited disruption.

Due in part to events like 3/11, which spectacularly inscribes a nuclear legacy by which the human will be read long after it itself is gone, the label of "Anthropocene" has seeped out of geology, stratigraphy, and environmental debates into popular culture.⁶⁷ As the term becomes more widely recognised, it has been met with growing anxiety that it is likely too late to "optimise" the climate—the necessities of the task seem to outstrip current technological abilities. This is particularly evident in news coverage of the attempted decommissioning of the Daiichi plant in Fukushima, and the rehabilitation of the exclusion zone. These ambitions face two key challenges. First, the initial task of retrieving spent rods from damaged reactor units has been delayed multiple years due to difficulties accessing the area. Fuel rods inside unit 2 have been recorded as emitting radiation as high as 530 sieverts per hour, intense enough to kill humans instantly (Macdonald). Robotic attempts to access the roads are also currently hampered by this

⁶⁷ The term gained entry into the Oxford English Dictionary in 2014, a marker of cultural legitimacy not achieved by other neologisms describing the human sphere of influence such as "anthropozoic" by Antonio Stopponi in 1873, "noosphere" by Pierre de Chardin in 1922 and Vladmir Vernadsky in 1943, "anthrocene" by Andrew Revkin in 1992, and "homogenocene" by Michael Samways in 1999. "Anthropocene" was also the OED's word of the day on Twitter on 25 July 2016. In the years since, the need to address anthropogenic climate change has become an increasingly charged political issue, evidenced by the actions of (and reactions to) highly vocal activists like Greta Thunberg. For a discussion of the "Anthropocene" concept's increased cultural currency, see Steven Corneliussen's "Media Attention Increases for the Term—and Concept—Anthropocene" and Robert Macfarlane's "Generation Anthropocene: How Humans Have Altered the Planet Forever."

intense level of radiation, which scrambles electrons within the semiconductors and paralyses machines. TEPCO predicts that decommissioning will take another 60 years, while some experts predict that the project will extend at least 80 years (Cheng). Second, the current approach to decontaminating the geographic surrounds of the plants offers only temporary solutions. For example, contaminated topsoil has been gathered and stored in vinyl bags, which are kept in depots around the countryside. As one news article reports, this means that the "radiation has not vanished; it has simply been moved elsewhere" (Polleri). The bags erode as they are exposed to the weather conditions and are ripped apart by plant growth, so that the "residual radioactivity inside the bags will eventually be scattered back into environment" (ibid.). These measures might create a *perception* of decontamination, or of a return to normality, but the goal is far from achieved—or even achievable.

While not so spectacularly or immediately lethal, other (non-nuclear) repercussions of human industry also present seemingly insurmountable hurdles to Crutzen's proposal of climate optimisation. For example, reduced carbon emission targets are not enough to undo the environmental changes that have already been set in motion. Susan Solomen et al. explain, "the climate change that takes place due to increases in carbon dioxide concentration is largely irreversible for 1,000 years after emissions stop" (1704). Statistics like these call to mind a scene from a 2014 episode of *The Newsroom*, in which an EPA scientist is interviewed by news anchor Will McAvoy about recent findings of CO2 levels:

- MCAVOY: Just so we know what we're talking about, if you were the doctor and we were the patient, what's your prognosis? A thousand years? Two thousand years?
- SCIENTIST: A person has already been born who will die due to catastrophic failure of the planet.
- MCAVOY: [Visibly surprised] Can you expand on that?
- SCIENTIST: Sure. The last time there was this much CO2 in the air, the oceans were eighty feet higher than they are now. Two things you should know: half the world's population lives within 120 miles of the ocean... [and] humans can't breathe underwater.
- MCAVOY: You're saying the situation's dire.
- SCIENTIST: Not exactly. Your house is burning to the ground? The situation's dire. Your house has *already* been burned to the ground? Situation's over. ("Main Justice")

Over the next few minutes, the scientist's summary of the climate grows ever bleaker, until an increasingly frustrated McAvoy finally states, "Let's see if we can find a better spin. People are starting their weekends" (ibid.). The tension between these two stances—the overwhelming despair of the climate change scientist, who can only see the coming end of the (human) world, and the flippant dismissal of the newsman, who focuses on the particular experiences of the here and now—are representative of the same polarisation found in Tōgo's haikus and the Japanese government's optimistic efforts to decontaminate the zone, or the friction between an imagined empty post-human future and an equally imagined productive human present. Yet the presence of Fukushima's "last farmers" suggests an alternative to these two extremes, a potential way to read territories where the effects of the Anthropocene are most visible not as *terra incognita*, as Crutzen writes. Rather, they suggest a possibly posthuman *terra inscrutablis*: an earth unknowable to human life as it is now.

THE LAST FARMERS OF FUKUSHIMA, FARMING THE WASTELAND

In early 2015, VICE released a short documentary on YouTube titled "The Last Farmer in Fukushima's Post-Nuclear Wasteland."68 It focuses on the plight of Naoto Matsumura, whose hometown Tomioka lies within the Fukushima exclusion zone a scant 15 kilometres south of the Daiichi plant. Matsumura was evacuated along with the rest of the townspeople on 3/11. Finding that the evacuee shelters were overfilled, he tried staying with his aunt, but was turned away. Addressing the camera while leaning against an emu, Matsumura explains that his aunt "said we were contaminated by radiation" ("The Last Farmer"). He takes a moment to joke about riding the emu through Tomioka's empty streets, asking "Would they consider that animal abuse?" The reference to animal wellbeing—an animal which itself appears incongruous to the geographic setting of the documentary—feels especially absurd as Matsumura returns to his story and details how, with nowhere else to go, he chose to go home. When Tomioka's human residents fled the impending nuclear fallout on 3/11, they left behind thousands of domesticated animals: cows trapped in barns, chickens in coops, dogs on leashes. "It was pure hell," Matsumara describes, "Some [animals] had died, and others were still living amongst the dead. They all starved to death." In a scopophilic lament, the camera lingers on the skeletal remains of

⁶⁸ The documentary was also released on VICE Japan's *YouTube* Channel under the title "Alone in the Zone."

cows still harnessed in stables, pans over silent streets where weeds flourish in the cracked tarmac, and dwells on overgrown paddies. "I had no choice but to stay," Matsumura says of his decision to continue living in Tomioka even once alternatives became available, "I couldn't leave the animals behind. They needed to be fed."

Matsumura is not the only "farmer" to return to the Fukushima Prefecture, defying the boundaries designating the exclusion zone in order to tend to its animal residents. Masumi Yoshizawa has rounded up hundreds of surviving cattle and cares for them at his renamed "Ranch of Hope" in Namie, 12 kilometres north of the nuclear plant (Fackler). Noburo and Nagako Harada also travel to Namie daily to look after their own small cattle herd, while Keigo Sakamoto cares for over 500 abandoned animals nearby in Nahara (Murano). Portrayals of these farmers in international media—newspaper and magazine articles, documentaries, crowdsourced funding drives, Facebook fanpages—tend towards hagiography, venerating their urge to care for the defenceless animal bystanders of 3/11. This humanitarian trope, in which humans are heroic caretakers of a destroyed environment, conforms to the most straightforward interpretation of the Anthropocene thesis.

At the same time, these portrayals also convey a sense that something fundamental has changed about the world—something that likely cannot be recovered. Themes of loss, displacement, isolation, and ruin are evoked via images of destroyed built environments and by interviews with survivors. Mourning the Tomioka that once was, Matsumura tells viewers,

Nature is amazing when you're a kid. There's rivers, oceans, mountains. You have fish in the rivers and oceans, and wild plants in the mountains. There's food to be found everywhere. That's how we enjoyed nature. But we've lost it all. There's no telling how long it will take to recover. ("The Last Farmer")

This melancholy for a place "not completely lost, but radically transformed" is indicative of what Glenn Albrecht has named "solastalgia," a "form of homesickness one experiences when one is still at home" (35). He writes, "solastalgia has relevance wherever there is the direct experience of negative transformation or desolation of the physical environment (home) by forces that undermine a personal and community sense of identity, belonging and control" (ibid.). As such, this melancholic yearning can be understood as a condition of the Anthropocene, an affective response that signals when a connection between people and ecological place is ruptured by long-lasting climate change like that experienced post-3/11. From a posthumanist perspective, the feeling of solastalgia might also signal a rupture to humanist meaning-making systems. When the existing relations of "physical environment" and human "identity, belonging and control" are thrown into uncertainty, or when humanity's control of its environment is shown to be tenuous, the human longs for the stability of the previously known world—a world that was quite literally "known" by, or totalised by, the human.

This desire for re-stabilisation is particularly evident in attempts to re-exert control, particularly control worked on and through the material of life itself, over the Fukushima exclusion zone. While theorisations of biopower, such as those discussed in Chapter 2, tend to focus on the politicisation of human life, modern governments administer *all* life. As Matthew Chrulew writes, nonhuman species of life such as plants, animals, and even ecosystems are likewise "subjected to manifold forms of power, violence and care— annexed, enclosed, culled, tracked, trained, bred, processed, exhibited, preserved, as well as experimented upon and industrially farmed for food—with the relevant disciplines of biological knowledge always at hand to refine these operations" (54). One such discipline is agriculture: the cultivation of nonhuman life, like plants and animals, for human consumption. Though Fukushima was once a thriving agricultural hub, its orchards, rice paddies, fisheries, and Wagyu cattle ranches are now marked by radiation, or at the very least have been marked by the stigma of nuclear contamination. One newspaper explains,

cows that survived [3/11] escaped their ranches to forage for food among empty homes and streets, where they became traffic hazards for trucks shuttling workers and supplies to and from the stricken plant. Proclaiming the animals "walking accident debris," officials from the Ministry of Agriculture ordered them to be rounded up and slaughtered, their bodies burned along with other radioactive waste. (Fackler)

No longer useful to human industry, these animals have been recategorised as outside of, and perhaps even hostile to, the Japanese government's attempts to re-administer the zone. Where once these animals would have died as agricultural products, and so for the purpose of human consumption, their existence can be viewed as having been reduced beyond even what little attention biopolitical regimes afford to animal life. Indeed, now politicised as "walking accident debris" these cows are representative of Giorgio
Agamben's theorisation of creaturely or "bare" life that is not murder-able and which is unsuitable for sacrament because it has no worth, even in death.⁶⁹

The intent behind this recategorisation and subsequent extermination—a desire for Japan to return to normality via a phoenix-like resurrection—is symptomatic of what Elizabeth Povinelli describes as the figural tactic of the Desert. As was discussed in Chapter 2, in *Geontologies: A Requiem to Late Liberalism* Povinelli argues that the administration of life has long been subtended by "geontopower," in which power is directed towards maintaining a division between life and nonlife. The Desert, she explains,

stands for all things perceived and conceived as denuded of life—and by implication, all things that could, with the correct deployment of technological expertise or proper stewardship, be (re)made hospitable to life. The Desert, in other words, holds onto the distinction between Life and Nonlife and dramatizes the possibility that Life is always at threat from the creeping desiccating sands of Nonlife. The Desert is the space where life was, is not now, but could be if knowledges, techniques, and resources were properly managed. (16)

Notably, the life that this management is directed towards are the specific modes of life prioritised by biopolitical governmental policies. Nuclear exclusion zones are not spaces of absolute decay. Organic life is plentiful, and images captured of both Fukushima's exclusion zone and the "zone of alienation" set up around the earlier Chernobyl nuclear incident intimate a return, or at least persistence, of nature: roots crack through concrete; moss grows on the insides of buildings, birds nest in piles of debris.⁷⁰ However, these examples of living beings are no longer recognised *as* living: they are, in the words of the Japanese Ministry for Agriculture, different forms of "accident debris." The persistence of these organisms, and the dichotomy of life not recognised as such, presents the possibility that the Fukushima exclusion zone is not only hostile to living cells, as radiation causes cancerous mutations, but that it is also somewhat hostile to *the knowing of life as life via biopolitical processes*.

⁶⁹ Agamben's reworking of biopolitical theory, the concept of bare life or *zoe*, and the "sacred" yet not sacrificial life of the *Homo sacer* were first discussed in Chapter 2.

⁷⁰ For examples of Fukushima specifically, see the ruin photography of Natalia Sobanska, Keow Wee Loong, Moises Saman, or Arkadiusz Podniesinki.

The return of the last farmers to Fukushima gestures to an alternative, perhaps more sympoietic, sense of life that struggles with the constraints of existing humanist biopolitical discourses.⁷¹ This is despite the fact that, as *farmers*, they are predisposed to viewing animals in their care as agricultural products. For example, Matsumura says,

I'm opposed to killing off the animals in the zone. So many of their fellow cattle died in pain. These are happy and healthy, yet the government wants them slaughtered. If there's a purpose, if they're for human consumption, I wouldn't care. That's just how life is. But why slaughter them for no reason? Why bury them? Just because they're here. I'm against that. To me, animals and people are equal. Would they kill people just as indiscreetly? ("The Last Farmer")

Similarly, Yoshizawa differentiates "between killing cows for food and killing them because, in their contaminated state, they are no longer useful. He believes the cows on his ranch, abandoned by him and other fleeing farmers after the accident, are as much victims as the 83,000 humans forced to abandon their homes" (Fackler). Despite the dangers of the irradiated environment they now live in, these animals are living longer than they would have if they had been farmed for their meat (ibid.). Rather than viewing these animals as walking accident debris or as agricultural products, the farmers appear to afford Fukushima's animals a human-like status on the basis of their presumed suffering and, somewhat ironically, because they are "no longer useful." No longer means to a human end, these creatures are recognised as ends in themselves by the returning farmers, who would have once slaughtered the animals without remorse. The surviving irradiated livestock are now framed as fellow survivors of 3/11, standing as evidence for and witnesses of a cataclysmic event—a revelatory apocalyptic fragment that appears to have provoked a transformation from humanist resources to posthumanist allies.

⁷¹ Though I did not know it until much later, my argument here moves along similar lines as Shukin's examination of these "refuseniks," who "ironically rehabilitate a sacrifice zone into a time-space of living and dying that opens an aporia within common sense... [rejecting] the resilient subjectivity that correlates with a neoliberal history of catastrophe and that sensibly agrees to cope with deadly capitalism" ("The Biocapital of Living—and the Art of Dying—After Fukushima" 4). Shukin suggests that these farmers evidence an "art of dying" (ibid.), embodying a "form of life' that is barely intelligible, or that doesn't make sense in relation to the governing rationality of human life and health..., caus[ing] an ontological perturbation within political common sense" (8).

As Cary Wolfe might argue, such reclassification can be understood as a form of humanist posthumanism, in view of the fact that while a shift has occurred in the humananimal relation, the structures of species differentiation have not actually been addressed or altered. Even so, when viewed in this way the last farmers suggest a certain form of posthumanist collaborative transformation, akin to that which Anna Tsing describes in The Mushroom at the End of the World: On the Possibility of Life in the Capitalist Ruins. Tsing proposes that the "capitalist ruins" of her title should not be dismissed or ignored, but examined in order to observe "What emerges in damaged landscapes, beyond the call of industrial promise and ruin" (18). Her ethnographic work centres on matsutake mushrooms, which are culturally significant in Japan but no longer grow there due to climate change and an invasive species of nematode that attacks the pines that the mushrooms grow under. She follows the now globalised trade of matsutake, working with foragers in disparate locales such as Oregon in the United States, northern Finland, and China's Yunnan Province, where forests degraded by human industry now provide the conditions needed for matsutake to thrive. "Mistakes were made," Tsing explains of these decimated landscapes, "but mushrooms popped up" (202). Resistant to conventional farming practices, the migration of matsutake shapes new life-worlds, creating precarious nonhuman-human assemblages of wild mushroom spores, pine forests, and human industry in previously abandoned geographies. Tsing thus sees these mushrooms as pointing towards "possibilities of coexistence with environmental disturbance," serving as a reminder that "Staying alive-for every species-requires liveable collaborations. Collaboration means working across difference, which leads to contamination. Without collaboration, we all die" (4; 28). Those returning to Fukushima, who are named "farmer" more for their previous occupation than for their current one, certainly live within their own ruins.⁷² In tending to Fukushima's abandoned animals and crops, the life-worlds that have been excluded from human consumption because they are "ruined" by nuclear contamination, these humans and animals do not sit easily within existing agricultural relations. Instead, they appear to occupy collaborative dying-worlds in which human and animal live to die together.

⁷² The emphasis of "farming" in descriptors of these returning humans might itself be read as an attempt to re-insert a capitalist humanist evaluation of life into the Fukushima exclusion zone, as the label narrativises their actions as, at the very least, a continuation of what has come before. However, the descriptor of "last" serves as a stark reminder that existing relations are in the process of ending—that whatever "farming" occurs does so in the liminal zone of the pre-apocalypse.

Despite the sympoietic connotations of such unpredictable relations, it must also be acknowledged that the exclusion zone appears to offer something of a limit case to Tsing's celebration of collaboration and contamination. Quite literally contaminated with nuclear material, the multispecies worlds within Fukushima are not life-worlds but dying-worlds that, if allowed to spread, will create more death. While contamination always produces new relations, those emerging in the Fukushima exclusion zone are not productive. Or, at least not when that productivity is calculated within existing capitalist structures. As such, in contrast to the matsutake-human assemblage Tsing identifies, serious attempts have been made to suppress these developing dying-worlds via decontamination. A key humanist discursive mechanism supporting this is a deterritorialisation—an erasure of existing relations between land, people, plants, and animals-that is gestured to by Povinelli's conceptualisation of the Desert as "space where life was, is not now, but could be if knowledges, techniques, and resources were properly managed" (Geontologies 16). Representations of Fukushima's exclusion zone largely ignore the presence of nonhuman life, labelling the territory as abandoned, deserted, contaminated, post-apocalyptic, a wasteland, and a wilderness. For example, though VICE's coverage of Matsumura's return showcases his altered relations with Fukushima's animals, the zone is still framed as largely empty via the Japanese and English titles of the documentary: "Alone in the Zone" and "The Last Farmer of Fukushima's Post-Nuclear Wasteland." A subtle colonial undercurrent can be identified in such characterisations, as the coupled descriptors of "wasteland" and "wilderness" historically fold together with the spread of a humanist and modernist worldview.

In the context of an era defined as and by the Anthropocene, "wilderness retreats" and "wilderness sanctuaries" now connote a sense of the wild that is simultaneously an exotic luxury—available for a hefty fee—and a pristine (but quickly vanishing) landscape inhabited by endangered species in need of human protection. Yet, "wilderness" landscapes were previously characterised as "'deserted,' 'savage,' 'desolate,' 'barren'—in short, a 'waste'…. Its connotations were anything but positive, and the emotion one was most likely to feel in its presence was 'bewilderment'—or terror" (Cronon 70). Familiar from narratives of the Wild West, this is a construction of the wilderness polarised against a Euro-centric worldview and which is associated with an imagined frontier: an ideological boundary between the civilised known and the civilisable unknown. Such spaces are framed as empty territory waiting to be filled up—often by violent means, as was identified in Chapter 4's discussion of *Westworld*'s (2016-ongoing) necropolitical structures. European

colonists viewed spaces like the "new world" of the Americas and the *terra nullis* of Australia as virgin and unoccupied. They were "not organised in a state form and ha[d] not created a human world" (Mbembe 24). Instead, settlers operated in a framework that meant that they brought humanity *to* the wilderness, land that was—until colonisation—wasted.

Similarly, mainstream representations position the Fukushima exclusion zone as wasteland (or wasted land). One Vanity Fair article, "Heroes of the Hot Zone," describes Fukushima as a "depleted wilderness," a "wasteland eerily emptied of 100,000 people" (Iyer). Such texts frame the zone, and nuclear territories like it, as a potent signifier of the Anthropocene's ruination: a geography in desperate need of human (and heroic) intervention and cultivation, deterritorialising and de-emphasising the nonhuman life of the zone as, for example, accident debris. The subsequent efforts to return humanity to this wilderness can be seen on a digital "drive" through Namie, the town where Yoshizawa and the Harada's returned to in order to tend to their cattle. Since 2013, Google Maps streetview cars have made semi-regular trips through the abandoned town, which is within the exclusion zone but is not so irradiated that it is entirely inaccessible to humans. Clicking through the streets in 2013 displays collapsed buildings and the detritus of daily life swept out of buildings and left in heaps on silent streets. On the Western outskirts of town is a damaged boat swept in by the tsunami, incongruously resting in a dead field awash with shards of metal and broken slabs of concrete (Figure 2). In 2014, the wreckage and debris sinks into an ocean of weeds (Figure 3). As the years progress, the reclamation project becomes visible: debris is swept away, bright orange cones are set up around

Content removed due to copyright restrictions. 2013 Google Streetview of the outskirts of Namie: <u>https://tinyurl.com/4dstnypc</u>

Figure 2: A boat on the outskirts of Namie, Japan in 2013

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2014 Google Streetview of the outskirts of Namie: https://tinyurl.com/5ac3rmk5

Figure 3: The same location overrun by vegetation in 2014

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2015 Google Streetview of the outskirts of Namie: https://tinyurl.com/4rarsmw4

Figure 4: Evidence of human clean-up in 2015

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2017 Google Streetview of the outskirts of Namie: <u>https://tinyurl.com/76zb3dz8</u>

Figure 5: New roadworks in 2017

rubble, and blue tarps are taped over broken windows. At the same site in 2015, the boat has vanished, leaving the side of the road empty, and the field has been mowed short (Figure 4). In 2017, a new road has been constructed (Figure 5). Though no humans are actually visible in the streetview capture of the town due to Google's policies, human industry is obvious in the removal of waste and the taming of vegetation. The implication of this sequence is that it is only a matter of time until the land is made re-habitable and no longer "wasted."

Countering this humanist perspective, 3/11—and by extension, the apocalyptic outcome of the Anthropocene thesis—can be read as a different sort of deterritorialising force: one which wipes away existing agricultural and industrial relations to create a paradox of human extinction and nonhuman proliferation that resists attempts to re-exert humanist control due to the environment's hostility to the human. In this instance, that hostility is due to nuclear irradiation, however ecologic volatility from anthropogenic climate change might also provoke similar deterritorialisation and, in turn, feelings of solastalgia as humans experiencing the pre-apocalypse witness the end of their own worlds. The Fukushima exclusion zone, having "lost [its] value for technological instrumentalism," is a sort of "involuntary park" (Sterling). Though Bruce Sterling coins this phrase in relation to cities abandoned due to economic collapse or raising sea-levels, it aptly describes the conditions of a nuclear exclusion zone. Rather than "drowned cities that cannot be demolished for scrap [and which] will vanish wholesale into the unnatural overgrowth" (ibid.), such nuclear sites are abandoned-at least in the short term-due to a perceived toxicity that teems with inhuman possibility: weeds overtake a wrecked boat on a backroad outside of Namie; fields of yellow flowers blanket the countryside surrounding the Daiichi plant (Podniesinski); radiotropic mushrooms flourish via "dark" photosynthesis (Biello).

The emergence of such life, which does not just tolerate nuclear radiation but which may actually depend on it, suggests that the nonhuman life emerging in Fukushima's exclusion zone is not only "not human," it is also an assemblage of living-nonliving relations that is not *for* the human. The ecosystem of these capitalist ruins has the potential to mutate beyond the human. A parallel can be drawn, here, to the "beyond" of the future implicit to the Anthropocene future—a time severed from the archive of human history either because humans no longer exist or because humans no longer exist as they do now *as* humans. Likewise, nonhuman life within the exclusion zone is a form of life made volatile by radiation that, potentially, leads to the sympoiesis of *inscrutabilis*: unknown and unknowable by a humanist frame of reference.

PART 3

6

STRING FIGURES, SO FAR

WORLDING THE NONHUMAN VIA SF

Previous chapters of this thesis have considered the role that concepts like "life" and its various others (strange life, simulated life, toxic [to] life) are called to play in maintaining the meaning of the human in post-human and posthuman contexts. This section reorients towards the ultimate other of both "human" and "life": nonlife. Following Jacques Derrida's deconstruction of the animal, it is well established within animal studies that "animal" is a diminishing or totalising identification. A similar argument can be made for "living" and "nonliving," which violently segment the world into things that do and do not appear alive (like humans). Remembering the definitions of Life discussed in Chapter 2, humanist cultural logic rests on a foundational assumption that there is a difference that matters between these two states. In deliberately orienting towards nonliving material, which is often overlooked because of this assertion, I will be once again focusing on representations of nonlife rather than attempting to make an ontological claim about nonlife itself. A series of concerns arise: What techniques can help represent the worlds of entities that humans have named nonhuman, including those "things" that are considered to be not alive? Might such putatively nonliving entities be encountered in a more sympoietic fashion, a sort of knowing-together that does not immediately or easily incorporate this other as Other via the metaphysical violence of totalisation? Is it even possible for a "sense" of world to be attributed not only to supposedly "world-poor" animals, but also to entities such as stones, which phenomenologists like Martin Heidegger

presume to be unworlded? I pursue this line of thought as part of an attempt to further unfold a posthumanist *problem*, to "reconfigure[e] the forces and intensities" (Colebrook and Weinstein xxviii) from which questions of the posthuman originate into the interrogative "it depends" that was first discussed in Chapter 1. Part of this reconfiguring includes considering alternate means by which life, nonlife, and the human might be communicated—and so, perhaps, come to be known as something slightly different than what has come before.

This section of the thesis thus includes an interlude from the traditional academic format in the form of an experiment with putting SF into praxis. Combining the technic of a children's picturebook⁷³ with the geoscientific narrative of a geological "life" cycle, I have created a scientific fabulation of "Stone Worlding." I consider this an SF not only because it weaves together science and fiction, but also because it is a pattern of and for knowledge—a "string figure" that will not, despite my lofty ambitions, undo or escape humanism. Instead, this picturebook is a "so far," a momentary pause in a long braid of patterns that, hopefully, collectively move towards increasingly complex yet open ways of thinking. This interpretation builds on Donna Haraway's sense of "SF" as a materialsemiotic sign which collects within it "science fiction, speculative fabulation, string figures, speculative feminism, so far" (Staying with the Trouble 2). Her list is far from exhaustive, and variations of SF include Hal Duncan's description of scientific fabulation "breach[ing] the everyday world of elsewhen were things work differently" (10). In a similar vein, Hugo Reinert writes of speculative fiction as "a discipline of the otherwise-possible" (96). Folding these interpretations together, I view SF as not only a genre but as a mode of thought which, by making the familiar strange, is particularly prone to symposesis. Prompting one to think through, with, beyond, and again, SF re-works, re-connects, and re-turns the conceptual hinges of knowledge.

Emphasised by the inclusion of "string figures" in Haraway's description is the fact that thinking and material processes *of* thinking, or SF as a mode of thought and the creation of SF texts, are unable to be untangled. In the children's string-fingering game of cat's cradle, patterns are cooperatively made and remade. An organised tangle of string

⁷³ Rather than "picture book" or "picture-book," I use the compound of "picturebook" in recognition that the "union of text and art... results in something beyond what each form separately contributes" (Wolfenbarger and Sipe 273).

passes between sets of hands, morphing from one shape to another. The string is the thing which is shaped—which is known and so made known—and which in being shaped makes the act of shaping visible—or makes the means of knowing apparent. Haraway explains,

Playing games of string figures is about giving and receiving patterns, dropping threads and failing but sometimes finding something that works.... String figures require holding still in order to receive and pass on. String figures can be played by many, on all sorts of limbs, as long as the rhythm of accepting and giving is sustained. Scholarship and politics are like that too—passing on in twists and skeins that require passion and action, holding still and moving, anchoring and launching. *(Staying with the Trouble* 10)

When patterns are passed on, they are held still long enough to be taken up by some other limbs, which in turn reshape the string into something new. The complexity of possible patterns slowly increases with every iteration. At times, a misstep may occur—or perhaps a misfinger. The string snarls into knots and cannot be passed on to be reshaped, and the game must restart. However, if the snarl is particularly tight a palimpsest effect might occur, so that traces of previous patterns will kink the threads of the string and affect future shapes—a particularly poignant image when considering the resilience of the concept of the human. Notably, no single pattern is ever the final version in this game: each is paused in a state of "so far," a decisive moment of "it depends" anticipating further transformation.

Recognising the significance of such pauses, this chapter is in part devoted towards key moments within the chain of string figures that have led me to attempt an SF worlding of stone, while also acknowledging the limits of representing nonhuman worlds via human technics. My discussion will revolve around the sense of "world" found in Jakob von Uexküll's ethology, Ursula K. Le Guin's therolinguistic extracts, and Thomas Nagel's essay on being a bat. All three can be treated as SF in the expanded sense that I have outlined, though only Le Guin's work is considered a "fiction." Each grapples with the nonhuman, demonstrating representational means by which one might attempt to encounter and translate nonhuman worlds into forms that are graspable by humans. From a posthumanist perspective, though, there is a key difficulty when addressing the nonhuman. Namely, the likely totalisation of both the human and nonhuman—the referent and the other—as such.⁷⁴ Thus, when pursuing posthumanism, particularly in a mode that strives to think with sympoietic problems rather than autopoietic questions, it is worth remembering that in M. Beth Dempster's initial theorisation of sympoiesis, she suggests that "We must not think: Equilibrium. We must think: Balancing?" (39). Within a humanism that differentiates between life/nonlife, inanimate and inorganic objects are presumed to be worldless nonbeings. For the posthumanist attempting to rethink this relation as a "balancing?", Uexküll, Le Guin, and Nagal can be read as "so far" instances of such balance. Tracing the interrogative conditionals of these works provides tools by which to consider an experiential world of the nonliving, as they negotiate competing forces such as: determining a distinction between the nonhuman and human; assuming that the human has a right to address or represent the nonhuman at all; rendering the being of nonhuman worlds familiar enough to be understandable by humans; showcasing similarities between, and so troubling the traditional hierarchy of, the human and nonhuman; imbuing the nonhuman with characteristics of the human in order to create an utterly anthropocentric and anthropomorphic sense of a singular world; being overly cautious in order to avoid such anthropomorphism and so reflexively positioning specific characteristics as exceptionally or essentially human.

STROLLING THROUGH WORLDS WITH UEXKÜLL

Broad enough to encompass everything, "world" is something of a nebulous noun that is somewhat problematic in its generality. Indeed, Derrida cautions that despite the ostensible unity of "world," there can be no common world with a shared horizon of meaning. This sense of community "is always constructed, simulated by a set of stabilizing apparatuses, more or less stable, then, and never natural" (*The Beast and the Sovereign 2* 8). As will be elaborated, no two beings occupy the same phenomenal world, and so "There is no world, there are only islands" (9). Shifting to using world as a verb—*to* world, world*ing*— moves away from this implied unity and instead suggests that worlds (an infinite number of "islands") are a procedural outcome of acts of being, doing, and making. As will become apparent, worlding does not require intention from the one who worlds, but is a

⁷⁴ The reciprocal nature of this totalisation was first outlined in Chapter 4, with reference to Roberto Esposito's writings on the people/thing binary, Emmanuel Levinas' relational ethics, and the co-constitutional distinguishing of self and other.

by-product of existence. Or, in terms hijacked from Heidegger, worlding is a consequence of being-in-the-world. Where I depart from Heidegger, though, is in the capabilities inferred by different forms of "being." Within the metaphysical framework that he constructs, "world" or Umwelt is not limited to a being's physical surrounds or environment, but also encompasses the ability a being has to access or make sense of or have concern for its environment. He viewed the question of life as tied to the question of being, so that the type of life a being can have equates to the type of being that that being can have. As was briefly discussed in Chapter 2, Heidegger famously described a tripartite scheme of life and being with "three theses: [1.] The stone is worldless; [2.] The animal is poor in the world; [3.] Man is world forming" (World, Finitude, Solitude 184). In saying that humans are "world forming," Heidegger positions the human as not just living in its surroundings but also as a being able to question both its surrounds and itself (its self). This is the unique mode of life and being that Heidegger names Dasein, a being-in-theworld that "is in such a way that, by being, it understands something like being" (Being and Time 15). Thus, Dasein is world forming, worlding, because it worlds its own world through metaphysical reflection. Conversely, the animal is "poor in world" because it is driven by mechanistic drives of survival and procreation, and does not have the capacity to reflect on its own being nor change its life's trajectory. Where animals are led by life's biological processes, Dasein leads its own life. Finally, there are inanimate objects such as stones, which do not survive time (as animals and humans do) but persist through time. A stone is worldless because it cannot access, make sense of, or enact change to its surroundings.

By beginning with the presumption that worlding requires a specific metaphysical capacity, Heidegger's framework leaves little option but to render the nonhuman as other to the *Dasein* of the human. Returning to the string figure metaphor, the pattern provided by Heidegger alone is too rigid to change in the posthumanist direction I am pulling. *Uexküll*, a biologist and early biosemiotician, provides an alternative sense of worlding, one that can be more easily reoriented towards the nonliving.⁷⁵ The text which best explains his

⁷⁵ Note that while the specifics of their orientation towards the possibilities of animal worlds diverges (to the point that animal worlds for Heidegger are referred to as *Umgebung* or environment), Heidegger's ontology is informed by Uexküll's work, as has been identified by Brett Buchannan in *Onto-Ethologies* and Giorgio Agamben in *The Open*. In particular, Uexküll's soap bubble *Umwelten*, discussed shortly, are echoed by Heidegger's "*disinhibiting ring* which prescribes what can affect or occasion its [the animal's] behaviour" (*World, Finitude, Solitude* 255). For Heidegger, however, the mode by which the animal can relate to the objects of its ring is limited to captivation, in that animal does not apprehend or access

sense of Umwelt is Streifzüge durch die Umwelten von Tieren und Menschen: Ein Bilderbuch unsichtbarer Welten, first published in 1934 and translated into English by Claire H. Schiller as A Stroll Through the Worlds of Animals and Men: A Picture Book of Invisible Worlds in 1957. In recognition of the influence of this work, it was retranslated by Geoffrey Winthrop-Young in 2010 for the University of Minnesota Press' Posthumanities series.⁷⁶ This more recent version is titled with the less whimsical A Foray into the Worlds of Animals and Humans: With a Theory of Meaning, a change in language that reflects that the sympoietic SF qualities of Uexküll's work are slightly less obvious in this edition. For this reason, in the coming discussion I will primarily be referring to Schiller's 1957 translation.

Uexküll set out to determine the lives of animals in their own terms, constructing a sense of what animal worlds are like *for* animals themselves rather than defining the mechanistic world *of* animals as humans might judge it. Introducing his *Stroll*, Uexküll explains how one might fancifully imagine stepping into the sensorial world of an

Since the animal is ceaselessly driven in its manifold instinctual activities on the basis of its captivation and of the totality of its capacities, the animal fundamentally lacks the possibility of entering into relation either with the being that it itself is or with beings other than itself. Because of this being ceaselessly driven then animal finds itself suspended, as it were, between itself and its environment, even though neither the one nor the other is experienced *as* a being. (361-362)

As Buchannan explains, "It is as though animals are imprisoned within their own being, from out of which they can never leap or spring free", however it is also only via this captivation that the animal emerges, as "the animal comes to be itself, and have a self-encircled unity, in its being captivated with the environment" (90; 95). Thus while Heidegger, like Uexküll, might be read as framing animal being as relationally defined, the mode and possibilities of that relationship are always already restricted in comparison what is proper to *Dasein*.

⁷⁶ In his introduction to the new edition, Dorian Sagan describes Uexküll as "among the first cybernetic biologists, ethologists, and theoretical biologists, as well as being a forerunner to biosemiotics, and a Neo-Kantian philosopher" (4). Similarly identifying Uexküll's breadth and impact, Buchanan writes that his work has been applied to "studies ranging from classic ethology to cognitive neuroscience and from linguistics to art and philosophy.... Within continental philosophy alone, he has appeared in... Martin Heidegger, Ernst Cassirer, Hans-Georg Gadamer, José Ortega y Gasset, Jacques Lacan, Maurice Merleau-Ponty, Georges Canguilhem, Gilles Deleuze, and Giorgio Agamben" (3).

things as such, but rather is "captivated" by instinctive response. It is this captivation that results in the animal's world-poverty:

individual animal in order to determine what has meaning to the animal in the first place. He writes,

This little monograph does not claim to point the way to a new science. Perhaps it should be called a stroll into unfamiliar worlds; worlds strange to us but known to other creatures, manifold and varied as the animals themselves. The best time to set out on such an adventure is on a sunny day. The place, a flower-strewn meadow, humming with insects, fluttering with butterflies. Here we may glimpse the world of the lowly dwellers in the meadow. To do so, we first blow, in fancy, a soap bubble around each creature to represent its own world, filled with the perceptions which it alone knows. When we ourselves then step into one of these bubbles, the familiar meadow is transformed. Many of its colorful features disappear, others no longer belong together but appear in new relationships. A new world comes into being. Through the bubble we see the world of the burrowing worm, of the butterfly, or the field mouse; the world as it appears to the animals themselves, not as it appears to us. This we may call the *phenomenal world* or the *self-world* of the animal. (5)

In contrast to Heidegger's sense of animals as world-poor because they lack the capabilities of *Dasein*, in this initial description Uexküll frames "world" as the relationships formed by the unique perceptual experience of a living thing: its "phenomenal world" or "self-world." Making insects and other invertebrates the star of his *Stroll*, Uexküll presents *Umwelten* not limited to the human, or even to animals that are often viewed as almost-human. Instead, he frames *all* life as experiencing a series of worlding relations. As with Derrida, differing forms of life do not similarly experience a singular world. Instead, as Uexküll's meadow filled with soap bubbles suggests, there are multiple overlapping life-worlds. Dorian Sagan explains that "organisms [are] in their separately perceiving worlds—worlds that are necessarily incomplete, even for scientists and philosophers who, like their objects of study, form only a tiny part of the giant, perhaps infinite universe they observe" (1). Myself, a human; the purring systems lounging nearby, two cats; the worms in the compost window outside this window; the ants and dolphins and bats that I will discuss later in this chapter; each life occupies a distinct perceptual world and is a unique form of being that is determined or bounded by each individual organism's sensory apparatuses.

Thus, *Umwelten* are necessarily different simply due to the distinct stimuli that each organism perceives and responds to in its individuated worlding. Perceptual worlds comprise only the stimuli that any animal "sees" in its specific soap bubble: that of which it is aware or to which it responds. While humans may have access to a larger number of stimuli than, for example, an ant might, this does not make the human superior. Indeed, Uexküll warns his fellow biologists against the urge to reduce animals by "brand[ing] animals as mere objects. The proponents of such theories forget that, from the first, they have overlooked the most important things, the *subject* which uses the tools, perceives and functions with their aid" (*Stroll* 6). In this fashion, Uexküll embeds subjectivity in the material relation of organism and environment, writing that all living beings are "built into their organs, as we are into our bodies… subjects whose essential activity consists of perceiving and acting" (ibid.). The differentiation of any subject from its external objects is an ongoing interaction governed by a "functioning cycle" (10), which incorporates external

Content removed due to copyright restrictions. Image of the functioning cycle from Uexküll's A Stroll through the Worlds of Animals and Men

Figure 6: Uexküll's diagram of the functioning cycle (Stroll 10)

stimuli into the subject's world via internal perceptual receptors. Seen in Figure 6, this cyclically produces further objects or opportunities for stimulus. As Uexküll explains in *Theoretical Biology, "All reality is subjective appearance.* This must constitute the great fundamental admission even of biology. It is utterly in vain to go seeking through the world for causes that are independent of the subject; we always come up against objects, which owe their construction to the subject" (xv). In other words, for Uexküll subject and object are unable to be ontologically distinguished. The objects of any functional cycle do not precede its subject, and the subject/object distinction is not linked to a human/nonhuman binary. Rather, these labels offer an orientation: "subject" is a linguistic cue that identifies the perspective that the soap bubble fancifully seeks to represent, while "object" names the stimulus that this subject relates to in its material processes of worlding. In one evocative description of this process, Uexküll writes that "As the spider spins its threads, every subject spins his relations to certain characters of the things around him, and weaves them into a firm web which carries his existence... relations between a subject and the objects in his environment" (*Stroll* 14). The objects of any functional cycle

may in fact be *other* subjects, or other organisms occupying their own soap bubble *Umwelten*, but from the perspective of the worlding subject in question these others are given the role of object.

The environment of a subject can comprise any number of possible stimuli, many of which the subject might not have the perceptual capacity to relate to. Uexküll is thus careful in his *Stroll Through the Worlds of Animals and Men* to distinguish between an animal's "environment" from its "*Umwelt*" or "world," with the latter being narrowed only to the functional cycles that the subject possesses, or to the external objects that the subject perceives *as* objects.⁷⁷ He explains, "Out of the vast world which surrounds the tick, three stimuli shine forth from the dark like beacons.... The whole rich world around the tick shrinks and changes into a scanty framework... her *Umwelt*" (12). Visualising this distinction, Uexküll's *Stroll* is peppered with illustrations like Figure 7, which differentiates between what a human would see when looking at a bee in a meadow filled with flowers,⁷⁸

⁷⁸ Note that while this diagram helps to unravel "world" from "environment," this division itself might implicitly set up a sense that humans have access to a more "complete" world, as the human perspective is, here, representative of the environment. An alternative framing would label the left image as the *Ummelt* of the human, which in turn acknowledges that there are further stimuli that a human is not aware of because it lacks the perceptual capacities to develop functional cycles *for* those stimuli. Because this representation of the honeybee's *Ummelt* is itself a modified version of the human's *Ummelt*, it does not acknowledge that which the bee would be aware of but the human would not. For example, as early as 1927 it was understood that bees see in infrared and ultraviolet (Chittka and Walker). Considering the focus of Uexküll's research, he would likely have been familiar with this knowledge, yet this depiction of the honeybee's *Ummelt* does not suggest such a relation. Here, then, is another balancing that must be negotiated when attempting to represent nonhuman worldings: acknowledging the elements that lie outside of human perception.

⁷⁷ To avoid potential confusion, in this chapter I will use "environment" in Uexküll's style, though there are obvious similarities between the relational couplings of system/environment conceptualised via autopoiesis and the functional cycles of Uexküll's subject/object worlding relations. Indeed, the "environment" of any autopoietic system might be translated, here, into "a subject's world," as any system's environment does not precede or exist independently of the system but in fact is defined by the system's determination of self.

Content removed due to copyright restrictions. Image that differentiates the honeybee's "environment" and "Umwell" from Uexküll's A Stroll through the Worlds of Animals and Men

Figure 7: Uexküll's depiction of a honeybee's Environment and Umwelt (Stroll 41)

and the same field worlded in the perspective of a honeybee-subject. One notable absence in the second image is the distant mountains or trees that are suggested in the first image, for while these are part of the honeybee's general environment they are irrelevant to its current worlding. Opened flowers are signified by stars and crosses, which are differentiated from closed flowers (represented by circles). Each shape marks a different sort of perceptual relationship or functional cycle, or a different subject-object relation.

These illustrations image the fanciful soap bubbles of Uexküll's earlier introduction, and their abundance in the text amplifies the SF qualities of a *Stroll Through the Worlds of Animals and Men.* Indeed, as Schiller's translation of Uexküll's subtitle reveals, this is *A Picture Book of Invisible Worlds*: a speculative fabulation of both science and fiction. Intrinsic to this fabulation is an openness to the possibility of nonhuman "being," in something like a Heideggerian sense. Uexküll is able to imagine and map a honeybee's world because he *begins* from a stance that all living things subjectively form their own *Umwelt*, world*ing* via perceptual capacities. To be at all is *to* world. While he is undeniably organicist in his focus, Uexküll lays out what would today be identified as a particularly posthumanist sense of the subject that is not isolated to any specific substrate (such as the human), but which instead marks a node in the coming-together of multiple interacting material processes.

In reorienting towards nonlife, I propose a similar set of manoeuvres. Rather than presuming that stones are worldless, I began the experiment of constructing an SF picturebook of a stone's world with the premise that there is something like a nonliving subjectivity. However, as has already been suggested and as I will further demonstrate via a discussion of Le Guin and Nagal, the unique material embodiment of every being means that no subjective experience can be equated to another. Extrapolating, one might also say that nonliving subjectivity and living subjectivity are similarly incomparable—a stance which does not necessarily deny subject/object relations to nonliving entities by denying such a possibility, but instead raises complications when it comes to how one might map this particular soap bubble.

LE GUIN'S "AUTHOR OF THE ACACIA SEEDS" AND BEING A BAT WITH NAGEL

Attempts that humans make to depict or describe nonhuman worlding are encumbered with and by the phenomenology of materially *being human*, as can be seen in both Le Guin's and Nagal's considerations of nonhuman animals. The SF conceit of Le Guin's 1974 short story "The Author of the Acacia Seeds: and Other Extracts from the *Journal of the Association of Therolinguistics*" is that human linguists are learning Animal languages, flipping the conventional trope that animals have learned to speak. Instead, the presumption is that these nonhuman languages have rules and structures that the human can decode and translate into something it finds intelligible. Depicting language beyond the human, "The Author of the Acacia Seeds" echoes Uexküll's presumption that nonhuman life is rich with its own meaning. Featuring three excerpts from a fictional academic journal dedicated to studying these languages, this text calls into question the boundaries of what language can be thought to be, what qualifies as a text, and problematises an anthropocentric perspective of language and authorship by asking readers to reconsider not just *who* but also *what* can make texts.

The first excerpt, "MS. Found in an Anthill," warns against assuming that nonhuman experience is analogous to human experience. The contributing authors argue that an "ethnocentric interpretation of the world 'up" has mislead previous translations of an Ant text, which was "found written in touch-gland exudation on degerminated acacia seeds laid in rows" in an "orderly arrangement" (619; 617). They explain,

To us, "up" is a "good" direction. Not so, or not necessarily so, to an ant. "Up" is where the food comes from, to be sure; but "down" is where security, peace, and home are to be found. "Up" is the scorching sun; the freezing night; no shelter in the beloved tunnels; exile; death. (619)

Given this differing context, the scholars argue that Seed 31, which had been previously interpreted as "Eat the eggs! Up with the Queen!" would, "in human terms," be "Eat the eggs! Down with the Queen!" (ibid.). While Le Guin's therolinguists presume that animals

have culture and language, they are in this example cautioned against assuming that animal worlds are easily or accurately knowable by humans. Instead, the therolinguists remind that animal words are understood through the lens of "human terms," imperfectly translated via the phenomenology and material of human bodily experience.

Further explanation of this phenomenological barrier can be found in Nagel's 1974 essay, "What is it Like to Be a Bat?". Though he uses different language and logic to Uexküll, Nagel similarly positions reality as made up of distinct perceptual worlds. Criticising the "recent wave of reductionist euphoria" sweeping through emerging materialist theories, he argues that the complexities of the question of consciousness have been overlooked: "Without consciousness the mind-body problem would be much less interesting. With consciousness, it seems hopeless" (435; 436). Consciousness is evident in "many levels of animal life," Nagel explains, and "no matter how the form may vary, the fact that an organism has consciousness at all means, basically, that there is something it is like to be that organism" (436). Focusing on bats, Nagel performs a thought experiment to demonstrate that each organism's experience of *being* must necessarily be different. The sonar that bats perceive the world through means that "there is no reason to suppose that [this] is subjectively like anything we [humans] can experience or imagine" (438). Due to differing embodiments, the unique and distinct perceptual capabilities of humans and bats, and the ways that these bodies are differently configured to handle their capabilities, to humans bats are essentially a "fundamentally alien form of life" (ibid.). As such, there is a difference between imagining "what it is for me to behave as a bat behaves" and experiencing "what it is like for a bat to be a bat" (439). No matter how complex a being might be, on this account, any being can only truly know what it is like to be itself. Humans attempting to stroll through human and nonhuman phenomenological worlds are thus "restricted by the resources of [our] own mind[s], and those are inadequate to the task" (ibid.). In this fashion, Nagel is somewhat more cautious than Uexküll about the possibility of representing the subjective worlds of nonhumans, alerting against the reductionism that might follow from assuming that the experiencing of being is universally comparable to or translatable via other forms of being.

With this caution in mind, translating nonhuman (and, one might extrapolate, human) languages requires increased attention to the specifics of the embodiment in question in order to avoid transposing the qualities of one form of existence onto all forms. This nuance is further demonstrated in the second excerpt of Le Guin's short story, "Announcement of an Expedition," which advertises an upcoming expedition to the South Pole to observe Emperor Penguin: the "most difficult, the most remote, of all the dialects of Penguin!" ("Author of the Acacia Seeds" 621). Previously, the scholar writes, this "kinetic literature" had been believed to be "as forbidding, as inaccessible, as the frozen heart of Antarctica itself. Its beauties may be unearthly, but they are not for us" (622; 621). The description of a language "not for us" infers the key difficulty that human therolinguists face: that they cannot know what it is like to be a penguin. Indeed, tentative glossaries had previously been made by ignoring the unique embodiment of emperor penguins and attempting, instead, to transpose the already decoded kinetic languages of Dolphin and Lower Greylag onto the penguins. This conflation of Dolphin and Penguin languages, the scholar explains, may have been based on surface similarities but overlooked crucial differences: "The temperature of the blood is a bond. But the construction of the brain, and of the womb, makes a barrier! Dolphins do not lay eggs. A world of difference lies in that simple fact" (620). Likewise, the double ventriloquism of Human to Greylag to Emperor was attempted because of perceived similarities in form, as "penguins are birds... [that] do not swim but *fly in water*" (ibid.). However, this also overlooks the unique requirements of the emperor penguin's life and habitat, and so the scholar proposes that the upcoming expedition study Emperor during the breeding season, when penguins live huddled together in colonies on land. This requires an even more expansive definition of language, moving beyond the "touch-gland exudation" of Ant (617) that parallels ink and the expansive kinetic underwater flight of Penguin that parallels human expressiveness. Instead, the scholar suggests that this "little band of poets" communicates primarily through shared "warmth. That is their poetry, that is their art. Like all kinetic literatures, it is silent; unlike other kinetic literatures it is all but immobile, ineffably subtle" (622). Language and meaning, Le Guin thus suggests, is not limited to forms that humans are familiar with.

Taking this premise seriously results in looking for meaning beyond the boundaries of life and towards those things which are, traditionally, meaningless *things*. This is seen in Le Guin's third and final excerpt, "Editorial. By the President of the Therolinguistics Association," which begins with a rumination on the nature of language and art: "Language is communication. That is the axiom on which all our theory and research rest, and from which all our discoveries derive" (623). The president warns, though, of missing evidence of communication (or of meaning) because it does not resemble a human mode, writing that "We must not become slaves to our own axioms" (624). The prospect of the "almost terrifying challenge of Plant," the president reflects, requires that "we must rethink the very elements of our science, and learn a whole new set of techniques" (ibid.). They continue,

All we can guess is that the putative Art of the Plant is *entirely different* from the Art of the Animal. What it is, we cannot say; we have not yet discovered it. Yet I predict with some certainty that it exists, and that when it is found it will prove to be, not an action, but a reaction: not a communication, but a reception. It will be exactly the opposite of the art we know and recognise. It will be the first *passive* art known to us.

Can we, in fact, know it? Can we ever understand it?

It will be immensely difficult. That is clear. But we should not despair. Remember that so late as the mid-twentieth century, most scientists, and many artists, did not believe that Dolphin would ever be comprehensible to the human brain—or worth comprehending! Let another century pass, and we may seem equally laughable. "Do you realise," the phytolinguist will say to the aesthetic critic, "that they couldn't even read Eggplant?" And they will smile at our ignorance, as they pick up their rucksacks to read the newly deciphered lyrics of the lichen on the north face of Pike's Peak.

And with them, or after them, may there not come that even bolder adventurer—the first geolinguist, who, ignoring the delicate, transient lyrics of the lichen, will read beneath it the still less communicative, still more passive, wholly atemporal, cold, volcanic poetry of the rocks: each one a word spoken, how long ago, by the earth itself, in the immense solitude, the immenser community, of space. (624-625)

I quote this passage in full to draw attention to the slow expansion from the relatively familiar (but still alien) Animal, to the unfamiliar (but still living) Plant, to the possibilities of Stone. The posthumanist decentring of the human has similarly spread from animal to encompass plant and stone: *Through Vegetal Being: Two Philosophical Perspectives* by Luce Irigaray and Michael Marder; *The Language of Plants: Science, Philosophy, Literature* edited by Monica Gagliano et al.; *Plant Theory: Biopower and Vegetable Life* by Jeffrey T. Nealon; *Stone: An Ecology of the Inhuman* by Jeffrey Jerome Cohen. Far from an exhaustive list of recent publications in this area, these titles reveal that nonhuman worlds have been made the object—or perhaps, subject—of renewed study. But, as the president of the Therolinguistic Association asks, can humans, in fact, know the nonhuman?

This question flags an underlying problem of knowledge and knowing, particularly when it comes to forming knowledge about nonhuman worlds which are not only different from the human but are also, due to the unique compositions of different embodiments, always different from other nonhuman worlds. Namely, in Le Guin's short story a distinction is made between *reading* Ant and *knowing* what Ant means. The human therolinguist might extrapolate that, to the ant, "up" is good and "down" is bad, but they cannot be the ant in question, as Nagel's consideration of bat phenomenology demonstrates. Furthermore, the very material by which the human attempts to read meaning into Ant, and thus infer what it is like to be an ant, is hampered by the human means by which that knowledge is further communicated—not through glandular secretions on seeds but glyphs written onto a page. The substrate of knowing cannot be separated from the knowledge constructed, as is gestured to by Haraway's "string figures." Karan Barad similarly emphasises this link in her theorisation of an intra-dependent ontoepistemological theory of agential realism, writing that "Matter and meaning are not separate elements.... Mattering is simultaneously a matter of substance and significance" (Meeting the Universe Halfway 3). This point is crucial to remember when it comes to posthumanist SF representations of nonhuman worlds, such as the picturebook experiment that follows this chapter. As shall be elaborated in Chapter 7, this is not a representation that attempts to definitively construct the being of the stone, but rather an SF that tries to imagine the possibility that there is something *like* being a stone. Ants, penguins, stones: all can be considered different "alien forms," as Nagel puts it. From a humanist perspective, the obstacle of knowing the being of these others can result in a pejorative totalisation of "other." However, from a posthumanist perspective which sees even the category of "human" as intrinsically heterogenous, alterity does not necessarily mean that the nonhuman should be totalised as something less meaningful or less important than humans. Balancing against this, though, is the issue of projecting the human onto the nonhuman, of reading the meaning of the self into the actions and behaviours (or nonactions and lack of behaviour) of the other. One way to address this is to frame human understanding of-or attempts to make knowledge about-the nonhuman first and foremost as an act of translation that does not only speak to or with the nonhuman, but also through the distinct material embodiments in question.

The complex balancings of to-with-through draw attention to one possible limitation of "The Author of the Acacia Seeds," namely that nowhere within the excerpts that make up this short story is there an attempt to speak *with* the animals whose languages are being discussed. For this reason, it is possible to say that even while the story grants animals language, de-emphasising a key foundation of the human/animal binary, animals (and Animal languages) are categorised and thus totalised as objects of human study. As the president of the organisation says, they have not yet "discovered" Plant.⁷⁹ An alternative to this diminishing reading, one which attempts to balance the quagmire of "knowing" and forming knowledge about the nonhuman, is to say that Le Guin depicts a vantage point that acknowledges the obstacle of the alien nature of the animal's subjective experience, and the wholly different content of their language. Communicating with an ant through Ant requires first the development of a lexicon that allows a human to approximate the language in question, but also requires that the ant recognise this potentially garbled form of communication as an attempt at language in the first place. The ant would be faced with the incomprehensibility of Human. The difficulties of this potential exchange are encapsulated by Ludwig Wittgenstein's statement that "If a lion could talk, we could not understand him" (225). This single sentence-given without further explanation-comes in the context of a discussion of the contingent nature of the language games played by those attempting to understand others. Wittgenstein writes,

one human can be a complete enigma to another. We learn this when we come into a strange country with entirely strange traditions, and what is more, even given a mastery of the country's nature. We do not *understand* the people. (And not because of not knowing what they are saying to themselves.) We cannot find our feet with them. (ibid.)

Despite efforts to translate Ant to Human, the therolinguists are still unable to find their feet with ants because of the vastly different forms of being that each language materialises

⁷⁹ Another limitation is the sense that Animal languages are largely similar in form to Human recorded via deliberately placed fluid (glandular secretions rather than ink) or expressed via body language. Though this assumption is somewhat troubled in the excerpt dealing with Emperor Penguin and in the president's suggestion of Lichen and Stone languages, the alternate forms are still somewhat comprehensible in human terms. More notably, these forms are still largely palatable to human sensibilities. Yet, as a 2016 study by Adria LeBoeuf et al. shows, carpenter ants communicate via means that would be viewed as abject from a human's perspective. Via "trophallaxis" or fluid exchange, ants quite literally vomit semi-digested food and chemicals into each other's mouths to communicate colony needs.

and naturalises. Cary Wolfe writes that Wittgenstein's talking yet incomprehensible lion keeps the question of what differentiates humans and animals "alive and open by insisting that the difference between participants in specific language games and those 'not of their flesh' may be as profound as those usually taken to obtain between the human *as such* and the animal *as such*—as if there were, any longer, any such thing *as such*" (*Animal Rites* 47). In acts of communication, "not *the* world but simply *a* world emerges from building a shared form of life through participation in a language in a language game" (47-48). From this perspective, Le Guin's depiction of an academic debate over the contextual and embodied meaning of "up" does not grant the human access to "the" world of the ant, but rather places both Human and Ant in dialogue to create *a* world—a string figure or "so far" that sees both participants as subjects with their own perceptual capacities, needs, and experiences.

"SUBJECTIFY THE WORLD"

Building on the patterns laid out in this chapter, the SF experiment in the following interlude is not meant to imply the being of stone. Rather, as was suggested above, by beginning with the premise of nonhuman and nonliving subjectivity the picturebook opens a dialogue to represent *a* world, rather than a description of *the* world. During her keynote address to a 2014 conference on the Anthropocene, Le Guin reflected that "Perhaps what I'm trying to do is to subjectify the world, because look where objectifying it has gotten us. To subjectify is not to co-opt and colonise and exploit. Rather, if it's done honestly, it involves a great reach outward of the mind and the imagination." Informed by Uexküll's sense of the subject, I do not view this call to "subjectify the world" as an assumption that humans and nonhumans, living and nonliving, ants and bats and stones *are* in the same way. Rather, "subject" serves as a linguistic cue that designates the nexus of an individual world, and Le Guin's call reminds that such nexuses need not be human. Imagining something like a stone's subjective world requires being open to the prospect that the subject-stone relates with object-others.

This imagining, which might also be considered an encountering, also requires balancing the familiarity of human experience against the phenomenology of the alien being that is approximated, calling on language that itself is carefully selected to neither privilege a human perspective nor diminish nonhuman possibility. Personifying the nonhuman via human attributes and characteristics leads towards anthropomorphism that amplifies the value of the human outwards. However, saying that nonhuman and human experiences are totally unalike can also result in reaffirming an exceptionalist view of the human by implying that certain behaviour "belongs" to humanity alone. Discussing the characterisation and role of animals in science fiction, Sherryl Vint writes that the challenge of such endeavours is,

to pay attention to the actual lives of animals, to observe carefully the times at which it is appropriate to attribute them motivations for behaviour that are similar to our motivations for similar behaviour, and times when their differences of embodiment, sensory organs and other capacities make such attributions unlikely... we need to be careful that in the rush to embrace similarity we do not erase specificity. (*Animal Alterity* 13)

Tripping over Vint's use of "appropriate," one might wonder whether it is even appropriate to speak of a stone's experiential world. After all, paying attention to the actual being of stones is necessarily different from determining an animal's *Umwelt* or specific world. Uexküll advises that the "first task of *Umwelt* research is to identify each animal's perceptual cues among all the stimuli in its environment and to build up the animal's specific world with them" (*Stroll* 13). Yet, as far as humans are currently aware, stones do not have perceptual capacities, nor do they exhibit recognisable behaviours that can be compared to human behaviours in order to extrapolate potential motivations. As an alternative to attempting to describe what something like stone "experiences" or "sees," I suggest mapping the material relations of the forces and pressures that nonliving materials encounter. Thinking worlding as a problem of force and pressure, rather than as a question of perceptual capacities that are themselves defined by and measured against the standards of (human) life, de-emphasises humanism's originary distinctions of life/nonlife, organic/inorganic, and animate/inanimate.



STONE WORLDING

Written by Serena McClellan Illustrations by Madeline Hermawan



AT THE TOP OF THIS MOUNTAIN



STONE ARE

Sometimes Stone are wet



Sometimes Stone Are cold

SOMETIMES STONE ARE TOO COLD AND WET

STONE PUSH AWAY

STONE LEAVE PIECES BEHIND A MESSAGE FOR THE FUTURE

1




STONE SWIM FAR IN THE FAST RIVER

STONE JUMP

F









THIS IS WHERE STONE COME TO MEET EACH OTHER

SOFT NOT-STONE COME TOO STONE MAKE SPACE

SOFT NOT-STONE CANNOT STAY FOR LONG STONE WILL REMEMBER

THIS IS WHERE STONE

NEED TO GO D O

Ν

STONE PUSH AND GROAN

STONE SHIVER

AND GRUMBLE

THEY ARE LOUD HERE

HOT STONE LOSE THEIR EDGES

AT THE TOP OF THIS MOUNTAIN

7

MIGHT STONE BE?

POSTHUMANISM IN PRAXIS?

I have an interesting history with minerals that are, in their aggregate form, named stone or rock. When I was a child, I split my summers visiting family in Austria and the United States. Every year, I followed rock cairns up Tennengebirge to the mountain hut my patrilineal family managed above the tree line. I learned of stone's treacherous mobility, and once got caught in a landslide when I misidentified a rough grouping of rocks for a cairn and wandered into an unstable area while looking for caves. In Kansas, I traipsed after older cousins to the edge of an abandoned quarry to fossick for fossils. Days from any water, we found remnants of ancient oceans in traces of fish skeletons pressed into rock. I tucked a pebble with a cockleshell impression the size of my thumbnail into my suitcase and carried it home to Indonesia, and for years it sat on my desk with a collection of cowries and sand dollars. In my teen years, I grew fascinated with geodes-ugly lumps of stone hiding caverns of glittering crystals. I enthusiastically smashed open promising rocks, though I never found a geode myself. During my undergraduate degree, I conned my way into working as a research assistant to geophysicists, though my actual area of study was firmly in the humanities. Once, I helped analyse tranquillityite samples gathered from both the moon's Sea of Tranquillity and Western Australia's Pilbara region. Once the samples were ground into dust, I selected the relevant crystals under a microscope, then used an ion probe to determine their material content. Knowing how matter decays, a ratio of lead to uranium can be used to determine a sample's age. The time-scale was

vertiginous, impossible for me to grasp in relation to my own human lifespan. Instead, I dutifully translated time into unremarkable decimals: 4.5 rather than four and a half billion years.

Despite a longstanding curiosity with the lithic, it was only recently that I thought to ask, as Hugo Reinert does, "What kind of critter might a stone be?" (96). As I expanded my gaze from the caesura within "life" to the ways in which those divisions are underpinned in Western ontology by a differentiation of life/nonlife, I wondered what approaching nonliving things with the presumption that they are worlding, rather than worldless, might reveal. Of course, that this is something that I had to learn to wonder reveals my own entrenchment in humanism, and its foundational ontological separation of life/nonlife. As was addressed in Chapter 2 with reference to Elizabeth Povinelli's theory of "geontopolitics," the division between life/nonlife is so central to humanism that those who do not recognise this distinction have, historically, been denied the status of human by Western colonisers due to their perceived "inability" to differentiate between agential and nonagential substrates (Geontologies 5). The view that presumes that stone is not a critter is thus in tension with countless non-humanist onto-epistemologies that do not position organic and inorganic as wholly different. Here in Western Australia, for example, many know the Darling Scarp as a long and low cliff line comprising what locals refer to as the Perth Hills. The humanist geoscientific narrative of the Scarp is that it signals a fault in the earth's crust, or a friction point in tectonic plates (Gozzard). Alternatively, for the Whadjuk-Noongar community these hills are the body of the Wogarl: the Rainbow Serpent Dreaming that carved out the local terrain while slithering through the land, "creating the trails and the hills.... At times this great serpent went under the ground and came up again forming the area where there would be lakes" (Nannup 1). The friction between these framings is worth pursuing, however I am not Noongar, nor have I developed a collaborative relationship with the Noongar community.⁸⁰ Attempting to

⁸⁰ By contrast, Povinelli has spent decades with the Belyeun community of the Top End of the Northern Territory, and her reflections on their colleagueship engages with many of the tensions that emerge when specific theoretical frameworks collide. Of particular relevance to the current discussion is her article "Do Rocks Listen?", in which she identifies that Western defenders of traditional (or: non-humanist) relations with land tend to "partition local cultural beliefs about the limits and meanings of *human* and *environment* from scientifically apprehended 'facts' of ecological and economic systems... rely[ing] on Western notions of human intentionality, subjectivity, and production" (507).

speak on this topic would replicate the colonial logic I have identified, and so I have taken a different direction with this chapter.

Given that the focus of this thesis has largely been on representations of life, rather than life itself, my reorientation towards nonlife was quickly followed by a consideration of the material methods that might aid in such a project. As Cary Wolfe has argued, "the nature of thought itself must change if it is to be posthumanist" (What is Posthumanism? 114). From the posthumanist's perspective, matter matters when it comes to meaningmaking, as the physical and material conditions from which meaning emerges are reciprocally materialised through the differentiation of matter as such. An alternative way to frame this interrelation is via Bernard Stiegler's theorisation of technics as "inorganic organized beings" (17). He positions human being as exteriorised by, and human experience preserved within, technical objects such as tools, technologies, and techniques. The horizon of human existence can thus be understood as reciprocally embedded within the technics that mediate the human as such, so that this supposed external technical realm folds into what the human means. Accordingly, Wolfe's charge to change "the nature of thought itself" (xvi), which I have interpreted as moving away from the self-(re)making meaning-making structures of humanism and towards posthumanist sympoiesis, demands different, or differently used, technics. This is not just an issue of *what* the posthumanist studies (such as human/nonhuman binaries that inform and are informed by humanist ontological categories), but also how these objects of study are "made" via the thinkingtools that are used to construct knowledge in the first place. Or, as I have quoted elsewhere, "we are also talking about how thinking confronts" "a thematics of decentering the human" (ibid.).

With these concerns in mind, the picturebook that precedes this chapter is an attempt to put posthumanism into praxis by worlding nonliving stone via an SF representational strategy that is non-typical to academia. I do not claim to describe the ontology of stone *as it is*, which is something of an impossible task. As Jeffrey Jerome Cohen writes, "The stories we know of stone will always be human stories" (*Stone* 9). Even so, this project attempts what Cohen describes as a "Lithic-induced perspective shift... an ontological and temporal reeling" (16) by extrapolating from Jakob von Uexküll's approach towards animal ethology. Starting with the material forces stone encounters, this picturebook does not depict the world *of* stone (for humans) but tentatively suggests worlding *for* stone. Balancing anthropomorphism and petromorphism, vitalism and

lithicism,⁸¹ *Stone Worlding* modifies Reinert's question of "What kind of critter might a stone be?" (96) to the problem of "might stone be?"

THE PICTUREBOOK

Typically made for young children, picturebooks are polysemic texts prone to sympoiesis. They touch on their subject matter lightly via simplified narratives, speculative fabulations of the otherwise-possible, and "incomplete imaginings" (Loo and Sellbach 52). Always a combination of "picture" and "book," or image and prose, these components on their own "never tell exactly the same story" (Wolfebarger and Sipe 273). This dissonance between what is imaged and what is written means that readers—the adult reading and the child being read to—must work to collaboratively make meaning with multiple sources, which includes both illustration and words but also the material components of a picturebook: the weight of the paper, card, or plastic of the book; the ink of images; textured swathes of fabric and rubber that invite children to feel their way through the narrative. A few days before writing this, I read Brendan Wenzel's *A Stone Sat Still* with a two-year-old named Lottie. This picturebook shows the lively world around a sedentary stone and the animals which interact with it over time. Lottie and I lingered on each glossy spread, such as one where the stone is "green, red, purple, and blue," and identified different elements on the page (Figure 8). "Where is the fox?" I asked, "What colour are

Content removed due to copyright restrictions. A scan of two pages from Wenzel's *A Stone Sat Still*.

Figure 8: A two-page spread from A Stone Sat Still (Wenzel)

⁸¹ Just as "anthropomorphism" describes the attributing human characteristics to the nonhuman, "petromorphism" (derived from the Greek *pétra* for rock and *pétros* for stone) implies attributing stone characteristics to the nonlithic. This is not a personification of stone via an anthropomorphic extrapolation. Rather, petromorphism requires identifying characteristics *first* in stone.

these leaves?" Thick with potential meaning, picturebooks like these are invested with a "plurality of possibilities" (Wyile 191). As Lawrence Sipe writes of the format, picturebooks "seem to demand rereading; we can never quite perceive all the possible meanings of the text, or all the possible meanings of the pictures, or all the possible meanings of the text-picture relationships" (101). In each (re)reading different elements are engaged with to produce a slightly different narrative experience, so that readers are not just complicit in the act of constructing narrative, they are made forcibly aware of their own role in combining disparate elements to produce specific knowledge. In this fashion, picturebooks can be viewed as a technic that makes the use of *other* technics highly visible.

Picturebooks are technics not just because of their nondiegetic storytelling, in which the picturebook is a pedagogical tool to teach, for example, colours and animals, but also due to their diegetic narratives, which are often rife with technical objects, both human and nonhuman in origin. This is a sense of the picturebook that is highly indebted to Stephen Loo and Undine Sellbach's article "A Picture Book of Invisible Worlds: Semblances of Insects and Humans in Jakob von Uexküll's Laboratory." As Loo and Sellbach write, the picturebook is "part of an assemblage of techniques and technologies, including image making, written language and the printing press… a technical means by which social and psychic expressions are inherited through externalizations" (52). They demonstrate this by re-picturing an illustration from Uexküll's *Stroll* to highlight the presence of the tools used in the experiment depicted. Uexküll's original version of the experiment, condensed to a single image (Figure 9), demonstrates that grasshoppers privilege auditory cues over visual cues. The mating song of a grasshopper "fiddling in a lively fashion… before a microphone" is played in a neighbouring room to "sex partners

> Content removed due to copyright restrictions. Uexküll's depiction of a series of grasshopper experiments in A Stroll Through the Worlds of Animal and Men.

Figure 9: Uexküll's depiction of an experiment with grasshoppers (Stroll 44)

Content removed due to copyright restrictions. A two-page spread from Loo and Sellbach's "Grasshopper Cabaret" that focuses on a grasshopper under a "GLASS BELL."

Figure 10: Loo and Sellbach's "Grasshopper Cabaret" (50)

gather[ed] in front of a loudspeaker [who] pay not the slightest attention to a specimen sitting under a glass bell, who fiddles in vain, since the sounds she makes cannot be heard" (Stroll 43). "The Grasshopper Cabaret," Loo and Sellbach's reinterpretation of this image and experiment, slices the image into a series of individual scenes (Figure 10). Each image is paired with new text to highlight the various technics that comprise this experiment: a "grasshopper, chirping to herself strolls down a CORRIDOR" to a room with a "MICROPHONE," a "SPEAKER," a "long WIRE," a "GLASS BELL" (49-50). With each grasshopper now pictured "out of phase with one another" (54), the "Cabaret" dissolves the unifying implication of Uexküll's illustration to multiple individual lifeworlds. These worlds themselves are affected by the tools that the human experimenters have introduced, so that the "Cabaret" leads one to consider whether grasshoppers, too, might have technical existences. Though it can be debated whether grasshoppers are aware of the specifics, it cannot be denied that the realities (or worlds) of these grasshoppers are restructured and remediated, perhaps even externalised, by technological prosthesis: a microphone, a speaker, a glass bell. While picturebooks might not always be so obvious in their diegetic identification of technics, readers will often draw attention to any that are present: "Lottie, where is the nest?"

Pushing beyond the *human* exteriorisation of Stiegler's original theory of technics, technical objects also need not be constructed by human hands. Nests, after all, are a tool designed by birds to aid in keeping eggs safe during incubation. This is a possibility explored to its extreme in many SFs, such as Ursula K. Le Guin's "The Author of the Acacia Seeds," where seeds provide a tertiary memory of an ant's anarchist protest. Along similar lines, in *Stone Worlding* stone "remember" the presence of "soft not-stone," which

in their worlding subjects-selves-stone determine to be object-other-thing. Rather than a world in which inert matter is instrumentalised for human purposes, here stone worlding instrumentalises organic matter. The potentially humanist inflection of "remembering" not-stone will be addressed shortly. However, for now it is enough to acknowledge that the posthumanist work Stone Worlding attempts is made more difficult by the fact that this is ultimately a human story, written and illustrated by humans for a human to read in a format that itself is a pedagogic tool that conventionally teaches human children how to be fully-formed adult humans. Nonetheless, the metatextual elements of the picturebook technic are well suited to constructing a disanthropocentric sympoietic sense of stone being. To be "disanthropocentric" is, as Cohen writes, to "assum[e] a world irreducible to its human relations and not existing for any particular purpose" (Stone 9). While there is an obvious human purpose to the production of "Stone Worlding," the relations depicted within it are not for the human nor for human ends, and make a problem of the differentiating categories of "human" and "stone." Not claiming to provide an objectively accurate representation of the world, this picturebook interlude explores the problem of "might stone be?" by offering a subjective and imaginative account of stone worlding via petromorphic relations.

RE-PICTURING THE ROCK CYCLE

As a starting point from which to identify stone relations, *Stone Worlding* re-pictures the geoscientific narrative of the "rock cycle" from a lithic perspective. In its traditional form, which many will remember encountering during elementary or primary school, this cycle narrativises the transition between sedimentary, metamorphic, and igneous states. Pushed deep into the earth by gravity, stones melt into magma, which can erupt and solidify into igneous rock. Weather conditions and erosion flake stone into sediment, which compacts into sedimentary rock. Alternatively, heat triggers physical and chemical reactions to create metamorphic rock. Somewhat aptly considering the SF (here, string-figuring) ambitions of this picturebook, *Stone Worlding* begins with a stark black and white drawing of the first page patterned off the simplified diagrams used to teach this model, such as the one pictured in Figure 11. This explanatory model is itself a technical object by which the nonliving world is organised for human knowledge, constructing a taxonomy of stone. There is, as Vicki Kirby reminds,

a seductive slide that conflates representations, models, and signs that substitute for material objects.... When dealing with scientific objects the transparent self-evidence

Content removed due to copyright restrictions. A black and white line-art diagram of the simplified "rock cycle".

Figure 11: Teaching material provided by the Earth Science On-Site project

of reality is even more persuasive, but even here we are encouraged to remember that these objects are actually literary—textual, or encoded forms of language—and to this extent, if they can only emerge through cultural manufacture, then their reality and truth is attenuated, *illusional*. (112)

To distance the picturebook from the objective scientific claims that might follow from drawing on the rock cycle as a point of origin, the closing page reflexively reveals the illusional reality of the model from which *Stone Worlding* departs. Shown in Figure 12, the clean lines typical to scientific diagrams are re-illustrated via a vibrant collage of the many artistic techniques that are introduced over the course of the picturebook: ink, charcoal, coloured pencil, watercolour, acrylic, and digital manipulation.⁸²

⁸² A range of artistic styles are deliberately integrated into *Stone Worlding* to reflect the various representational technics that are available to the picturebook format. Due to the constraints of digital submission I was unable to include textured materials like sand and rough shards of rock. However, ideally there would also be tactile elements that visibly and physically fold stone elements *into* the picturebook itself. For example, my illustrator Madeline Hermawan and I experimented with constructing images by layering clay coloured with different quantities of oxide to highlight the mineral origins of the human's painterly mediums, which in turn gestures to the way that "human"



Figure 12: The first and final pages of Stone Worlding

Note that in this discussion and in *Stone Worlding*, "stone" is used as a mass noun in itself, without individualising articles like "a," "the," or "this." These articles imply a degree of individualist autopoietic "T" rather than collective sympoietic "us." Combining the non-pluralised noun of "stone" with the plural conjugation of the verb "to be," or "are," suggests a sense of stone as a "universal and specific entity at once, of a certain time and yet a materialization of time out of memory" (Cohen *Stone* 8). That "are" could apply to we (first-person plural), you (second-person singular *or* second-person plural), or they (third-person plural) also complicates the division between self/other. Furthermore, phrases like "stone are cold" replicate the sort of grammatical errors made when learning a new language, so while *Stone Worlding* uses simple and accessible expression it still linguistically defamiliarises readers.

Returning to the rock cycle, while this model should not be conflated with what it is like to "be" stone, it does provide a means by which to identify the lithic relations that potentially contribute to stone worlding. Namely, the physical elements that prompt the transition from one geological state to another, like gravity, temperature, and moisture. Because stone do not "perceive" in ways recognisable to humans, the *Umwelt* depicted in *Stone Worlding* extrapolates from these physical relations in place of the functional cycles or perceptual loops that Uexküll draws on to map animal worldings, as discussed in Chapter 6. True to the reciprocal nature of functional cycles, while descending towards the earth's

representations and relations are materialised in stone. Ultimately, though, we decided that this would be lost in the translation to digital format.

core and undergoing chemical transformation stone produce further pressure and heat, which in turn prompts other stone reactions.

Though *Stone Worlding* maps stone *Umwelt* via the forces and pressures encountered during geological transformation, no taxonomic division between sedimentary states is ever made. Stone remain "stone" throughout, and do not abide by human divisions. As Cohen writes, "From a strictly geological point of view... a sediment is a sediment, and there is no good reason to separate your limestone from your dolomite" (32-33). Indeed, the knowledge of, for example, dolomite *as* "dolomite" is derived from "very particular questions" being asked of it, questions that are "mainly centred upon its petrochemical uses. Had we asked other initial queries, we would think of the rock rather differently" (32). The rock cycle is similarly produced out of "particular questions," which can be traced to the so-called father of geology James Hutton and his 1795 *Theory of the Earth*, in which he writes of,

a circulation of matter in this globe.... This earth, like a body of an animal is wasted at the same time that it is repaired. It has a state of growth and augmentation; it has another state, which is that of diminution and decay. This world is thus destroyed in one part, but is renewed in another. (in Tomkeieff 326)

As Sergei Tomkeieff explains, embedded within Hutton's writing of cyclical geological processes is a period-typical "view that the present earth is made out of the ruins of the old" (322). Hutton's approach, and the questions he asked, were themselves bound up with an emerging Enlightenment rhetoric about the natural, nonhuman world, the developing grand narrative of progressivism, and the stabilisation of geology as a field of knowledge.⁸³ A model that links sedimentary-metamorphic-igneous is predicated on the idea that there is a causal relation between these states that can be translated into a schema that humans can comprehend, despite the lithic timescale within which these processes take place. Though Hutton uses vibrant language like "growth" and "decay" to describe the passage from one state to another, life is notably absent from the current incarnation of the model—an elision which itself speaks to the now common-sense assumption that life and nonlife are fundamentally different states of matter.

⁸³ Or, reprising once more the Deleuzo-Guattarian distinction between "question" and "problems," the problem of *geos* here loses tension, stabilising into a discrete plane of knowledge with specific concepts and "fundamental principles" (Tomkeieff 323).

Ostensibly, the rock cycle in its typical pedagogic form describes what would happen in a lifeless world. As stone precede and will outlast any emergence of life, it may seem logical to exclude organic material from this model. Yet the acknowledgement of the Anthropocene thesis, as discussed in Chapter 5, is that humans have become geological agents. Human life and activity are not just fossilised in geological strata, but are a determinate force that frequently provoke the passage from one rock state to another. Fracking creates the conditions for earthquakes, which creates sediment that compacts earth into geological formations. Minerals are pulled from the ground and melted into "useful" metal in order to build girders that then flake into rust. Looking beyond the human, many minerals originate in life: dolomite needs salt reducing micro-bacteria to form (Vasconcelos et al.); limestone chalk comprises sedimented coccolith skeletons, the calcium carbonate shells of single-celled algae coccolithophores (Black and Barnes); rubies and sapphires are crystalline forms of aluminium oxide, and oxygen itself is a chemical element which is only abundant because of the Great Oxygenation event, when photosynthetic organisms began producing vast quantities of oxygen as a waste product (Lyons et al.). While lively concepts like death, blood, or reproduction are likely irrelevant to stone, life haunts stone worlding, a forceful presence not "seen" but "felt" in much the same way as gravity, temperature, and moisture. In "Stone Worlding," this sense of life as trace-object for stone is conveyed through a dissonance between prose and images. Visual traces of life that the human reader would be familiar with are present on almost every page to reflect the environment of the stone as the human would recognise it: flora, fungi, fauna, but also animal tracks, tyre tracks, an offshore oil rig, and fossilised fish. However, this nondiegetic identification is at odds with the diegetic text of the picturebook, which more closely reflects the lithic perspective at the heart of stone worlding and so rarely notices these elements. If life is identified within the diegetic narrative of "Stone Worlding," it is totalised as "not-stone."

This perspectival tension between lithic and nonlithic, life and nonlife, necessitates considered use of language when describing stone worlding in both the picturebook and in this discussion. Hence, the deliberate use of quotes around "seen" and "felt" to signify that these terms do not quite fit for stone because they refer to perceptual capacities of vision and tactility. Likewise, a reader of *Stone Worlding* might stumble over stone leaving pieces behind as a message for the future, or meeting, or remembering the fleeting presence of soft not-stone. Yet this very hesitation is itself a product of a sense that lithic and organic existences cannot be equated, signalling a complication that echoes the "balancing(?)" I

described in Chapter 6 regarding anthropomorphising animals. Namely, that identifying "human" characteristics in the nonhuman negates difference by rendering all substances alike to the human, while denying such characteristics to the nonhuman reaffirms human exceptionalism. Thus, in constructing *Stone Worlding* I avoided totalising stone via their uses for life,⁸⁴ but was also cautious both of anthropomorphising (or, perhaps, vitalising) stone via lively language, and of endorsing human exceptionalism by marking certain characteristics as exclusively "belonging" to lively material and so eliding their presence from lithic worlding. Along similar lines, in *Vibrant Matter* Jane Bennet advises that when addressing nonliving things "We need to cultivate a bit of anthropomorphism—the idea that human agency has some echoes in nonhuman nature—to counter the narcissism of humans in charge of the world" (xvi). While I do not disagree with Bennet, *beginning* with the human that then echoes into nonhuman nature might itself contribute to the persisting narcissism of the human, or reinforce the autopoietic robustness of humanism as a meaning-making system which produces the human as such.

Beginning instead with the subject/object relations of stone/not-stone from the lithic perspective, the speculative framing and incomplete imaginings of *Stone Worlding* prioritises petromorphism over anthropomorphism. Returning to the potentially problematic language of stone leaving messages for the future or remembering the past, while stone might not deliberately do these things it is undeniable that lithic composition reflects a sort of geologic temporality and memory. Thinking petromorphically, stone precede life and even provide the conditions by which living experience is possible. Rather than stone echoing human memory, humans might be viewed as echoing stone remembrances. Ted Toadvine suggests a similar understanding of stone when he writes that "The stone is both a part of the world and, as its effective exteriority, constitutive of the *there*, the spacing and material singularity, of the world. As a clast of the lithosphere, of the stony planetal skeleton that undergirds any earthly lifeworld, the stone also recalls or remembers the elemental geomateriality that precedes and exceeds all worlds" (73). The recognition of fossils and sediment layers as such may be due to a humanist method of narrativising the earth's past into its present, but these elements in themselves gesture to a

⁸⁴ The picturebook mentioned earlier, Wenzel's *A Stone Sat Still*, is an example of a narrative which tells the story of stone *for life*. Though it sits still, the picturebook's stone moves through different lifeworlds: rough from the perspective of a slug; smooth from the perspective of a hedgehog; a kitchen for otters; a stage for a cricket.

petric experience of time beyond the human frame of reference in which inorganic *and* organic materialities ceaselessly churn. As Cohen writes, "stone is difficult to contain within bounded spatial temporal scales. Lithic materiality pushes story into expanses too large to be contained by periodizations... carr[ying] a past surpassing human enframing" (*Stone* 8). Additionally, stone are disanthropomorphic in their archiving, not storing past encounters for the human or even for any particular purpose but simply as a by-product of their ongoing existence.⁸⁵

This potential purposelessness abuts against a likely reading of the picturebook as it appears here, namely that the visual progression from black and white simplified diagram to abstract collage might suggest that stone likewise move from simple to complex in their transition from one morphological state to another. The purpose of stone, one might problematically extrapolate, is to become more than what came before. However, this amplifies the grand humanist narrative of progress that is embedded within the rock cycle model's progression between sedimentary states. Contributing to this interpretation is that while I have described *Stone Worlding* as an interruption of, or interlude from, the thesis format, it must be acknowledged that this picturebook had to be constructed in a fashion that it could still be included in this body of work. Not only did that mean making concessions in terms of the physical technics used to construct this project (I could not include slabs of slate, for example), it also means that while there are no page numbers that indicate the order that the picturebook should be read, the different pages are bound into a static and linear series. Stone Worlding thus not only compresses the petric timescale into something that is accessible to human knowledge, but in its current order it also echoes the rock cycle's organisation of lithic worlding into a sequential narrative of morphological relations. However, stone do not form linearly or along a single trajectory. For this reason, I view the lithic perspective along the same lines as the metaphysical minimalism that John Caputo proposes. Minimalism, he writes,

lets events happen, lets them be, lets them go, without imposing grand and overarching schemata upon them, without simplifying them....

You cannot avoid linking one event to another and that to another, *ad infinitum*—again and again, and in different ways, over and over. But in this minimalist metaphysics or quasi philosophy of events you will never come up with

⁸⁵ Though *denying* stone purpose might itself be an act of anthropocentrism, it is possible to say that stone do not have purpose *in a way that the human recognises*.

some Meta-event that organizes all other events, that puts them to rest, that arrests their play, that sweeps over them all and gathers them to itself in a final "because" that gives them all a rest. (222)

Stone accrete, petrify, compound, composite, concentrate, fracture, and decay. Certainly, links can be made between the event-elements of these different states that constructs a linear sense of the petric processes of morphological flux. But stone temporality are less about an ordered progression and more about heterogeneous matter interacting.

Stone Worlding has therefore been constructed with the expectation that it will be ripped from its binding and shuffled, disrupting attempts to impose a single cohesive narrative on stone by amplifying the sympoietic re-readability of picturebooks. All prose is written in capitals, and no punctuation marks the end of one sentence or the beginning of another. Every illustration is set in an unbounded "now," depicting a "so far" moment in stone slippage, a pause that might last for a moment or eons. Elsewhere in the thesis, I have spoken of how deliberately chopping and shredding meaning can lead to sympoiesis. Referring to Donna Haraway's formula of "Human as humus" (*Staying with the Trouble* 32), I drew a parallel between the slowly decaying concept of the human and production of humus: wholly inorganic material composed of life's remains. While rupturing the narrative walls of *Stone Worlding* now represent events demanding to be, as Caputo writes, linked "again and again, and in different ways, over and over" (222.). The twenty pages of the picturebook can be arranged in over 2 quintillion combinations, but using a random



Figure 13: Rereading Stone Worlding



Figure 14: Rereading Stone Worlding

number generator I have identified the first four pages of one possible rereading, shown in Figures 13 and 14. Rereading this sequence of pages with Lottie, a new sense of stone worlding emerges. A silent rockslide leads to focused consideration of wet stone. Without the context of stone dropping into water the third image suggests a dark cave. Why do soft not-stone not stay? Why do stone remember? Why stone and not-stone at all? Again, there is a sense of movement from macro to micro, of general cave environment to specific stone physicality. Lottie points to the fourth page's fractured stone and tells me they have a rainbow heart.

Lithic worlding, or what it is like to *be* stone, is ultimately unaddressable by human phenomenology. Even so, while *Stone Worlding* is a human story of stone being it makes problems of these categories, of "human" and "stone" and "being" and even "story." The diegetic content of this picturebook provides an SF glimpse of petromorphic worlding in defamiliarising terms that the human will nonetheless find comprehensible. Yet as Haraway has written, "All readings are also mis-readings, re-readings, partial readings, imposed readings, and imagined readings of a text that is originally and finally never simply there. Just as the world is originally fallen apart, the text is always already enmeshed in contending practices and hopes" (*Simians, Cyborgs, and Women* 124). In the contingent narrativisation of each re-shuffled reading, *Stone Worlding* calls the reader to read *with* the technics at hand to produce meaning that is never whole or final.

Might stone be? Decisively, the picturebook sympoietically informs, it depends.

CODA

Though the discursive foundations of humanism have been disrupted and deconstructed by changing real-world conditions and scholarly intervention, the "human" remains. I have contended that the concept of autopoiesis, which posthumanists have used to complicate the human as a relationally emergent figure rather than an ontologically discrete entity with unique characteristics, provides a lens to examine the meaning-making processes by which humanism continually (re)defines its system-self: the human naturalised as an autonomous being, sanitised from an inferior external world. Because the posthuman is likewise a relationally defined concept (and posthumanism is itself a meaning-making system that seeks to "post" from within), its emphasis shifts whenever the boundaries of its referent (the human) are redrawn. The work of posthumanism is thus never done—or, at least, it can never be known to be done. This is not just because, as was indicated in the Introduction to this thesis, the idea that posthumanism might one day supplant humanism is itself a fairly humanist sentiment—hence the deferral of the "posthuman... to come" (Peterson 129). Posthumanism's ongoing and incessant interrogation of its object of study is also because, as was discussed in Chapter 2, the ironic limit of posthumanism is that "we can get posthuman only at the death of the subject" (Lauro and Embry 87). If the human were ever truly to be "post-ed," posthumanism itself would cease to make sense because there would be, by current standards, no meaningmaking subjects who could make sense of it.

In addition to being somewhat impossible, to offer a final word on the posthuman would be antithetical to the loosely consistent sense of posthumanism that I have aspired to across this thesis: the interrogative conditional implicit to "decisively, it depends"; the posthuman as a philosophical *problem*; the balancing(?) of sympoiesis that holds ideas in tension; the "so far" string figures of SF. I am therefore hesitant to make definitive claims about, for example, the efficacy of picturebooking as a posthumanist sympoietic technic—though I do believe that experimenting with, playing with, the means by which knowledge is communicated is a fruitful area of investigation. Despite this reticence, some broad themes can be extracted from the arguments laid out in previous chapters.

The main research commitment of this thesis has been to examine the imbrication of "life" and "human," or the ways in which these concepts can be seen to overlap one another within humanism, with a view towards identifying moments when humanist determinations of life infiltrate posthumanist contexts and so reciprocally shape the imagined posthuman as human, all too human. Proceeding from this commitment, I have not aspired to supersede or escape anthropocentrism or humanism. Rather, I have attempted to show some possibly different ways of thinking about how the human and life get braided together-rereading the naturalised essences of "human" and "life" as texts in themselves, with a thickness of possible meaning that strains against the structures that produce (and reduce) them as such. At first, this scope was largely informed by the findings of biopolitical theory, which draws attention to how the human, under modern governance through and of life as such, is subjectivised as an idealised mode of living being, one which itself is reciprocally informed by and further reinforces specific meanings of "life." As I have suggested through an examination of specific instances where nonhuman life has been rendered "other," humanism's reification of the human and its nonhuman counterparts appears to be underpinned by a differentiating logic of (human/nonhuman)life/nonlife so that, in an additional measure of reciprocity, the living human totalises an idealised mode of nonliving being-namely, empty and inert "things" which are without intrinsic meaning but are for human use. Yet this formula, and the initial orientation of this thesis towards life and the human, only makes sense from a perspective that similarly constructs a distinction between life and nonlife. Here, we run up against Neil Badmington's challenge to "attend to what remains of humanism in the posthumanist landscape" (15) in a way that is slightly different to my initial desire to identify residual humanism in contexts and texts that, on the surface, might be deemed posthuman.

I wrote above of the human and life as "imbricated." While I have long used this term to describe layering relationships, it was only recently that I realised that I likely absorbed this term during my days working with geophysicists. In sedimentology, imbrication describes when fragments of stone or rock stack and flow together with a shared orientation (Laming), a geomorphic phenomenon that is echoed in roof shingling that overlaps like fish scales. Each row depends on the previous layer for stability, and in turn scaffolds further orientation. While the word is also used by linguists (Inkelas), it is worth noting the geological sense because meaning itself can be similarly understood as imbricated, stabilised and scaffolded, in the semantic loading of the means by which meaning is conveyed. What the findings of both systems theory and deconstruction suggest is that, as has been aptly argued by Jacques Derrida, meaning is endlessly referential, and concepts "receive meaning only in sequences of differences" (*Of Grammatology* 70). Nothing can be known as *just* itself. Or, as John Caputo explains,

To speak at all is to have recourse to a way of framing and phrasing, to fall back upon a way of dividing up and parceling out, to mark the world up (*archi-écriture*) and to stake it out in one ontocategorial way or another. That is unavoidable. The idea is not to deny our presuppositions but to unfold them with greater penetration, staying on the alert as best as we can to the ontocategories that shape our thought, troubling ourselves about them and worrying them a lot. (220-221)

Petulantly, I might respond to Caputo with the snotty dismissal of "surely you just mean 'to speak *as human*", and reject the differential parcelling of meaning as a *humanist* way of thinking to which I, as an aspiring posthumanist, am not susceptible. But the reality is that I know myself as human, and cannot get "outside" of the logocentric system of auto-affective meaning that produces ipseity, or that allows for me to recognise myself as, well, "me" and "not you." Though such elements are inherently shifting and hetero-affective, "far less stable than any semiotics of text, culture and technology could ever allow" (Lucy *Dictionary* 142), the world as I know it is given to me in advance in ontological categories of "something" that endlessly and hierarchically refer to "something else," a worlding that I reciprocally further world as "I" relate to the "not-I."

Returning to the specific sense of posthumanism that I have identified in this thesis, that is the ambition of reconfiguring the forces by which the human is produced as such and the interlinked desire to destabilise the naturalised differences from which discrete concepts are derived in order to provoke *problems* rather than *questions*, we are similarly

unable to get outside of humanism, and so cannot arrive at a vantage from which humanism *is not* present within posthumanism to some extent. Not only will there always be "remains" of humanism, but posthumanism is unthinkable without humanism as a referent. While there is no point in denying this, perhaps some of the violence that follows from humanism's metaphysical totalisation can be mitigated. Echoing Caputo's unfolding of presuppositions with greater penetration, the posthumanist in this sense is well served by attending to the imbrication and organisation of meaning within humanism, identifying aporias and attempting to rupture the apparent cohesiveness of the naturalised ontology of the human.

Indeed, in many ways this thesis has been about identifying concepts that organise thought of both the human and the posthuman, worrying at the binaries implicit to dominant cultural logic and seeking fuzzily described sympoietic relations of negotiation rather than negation. The most obvious of these concepts are "human" and "posthuman" themselves, as well as "life" and "nonlife," but in the spirit of offering a range of vantage points from which to examine the differentiating inferences of "life" and "human" each chapter has introduced distinct (but overlapping) loosely consistent constellations that begin with: questions and problems, autopoiesis and sympoiesis, system and environment; biopower and necropower and geontopower, zoe and zoe; Fungi and Plant, monstrosity and the post-apocalypse, the zombie and the zombii, unbecoming and becoming-monster and becoming-human; AI and AL, "real" organic thinking-life and the uncanny valley of simulated "thinking" life(like), the wild and the frontier, animal-machine and machineanimal, consciousness and performative consciousness; natural and human disasters, reconstructive sustainability of the productive human present and the fragmentary preapocalypse, the Anthropocene and the depleted wasteland of the post-human future, collaboration and contamination, nuclear decay and irradiated abundance; string figures and so far, environment and worlding, the subject and its perceptual objects; picturebooks and technics, stone and nonliving subjectivity, anthropomorphism and petromorphism.

In my own organisation of these organising concepts, I have further knitted together specific chains of referential meaning. Holding these referents in tension, or seeking the balancing(?) described by sympoiesis, leads to investigating their necessary conditions: the imbricating event-elements that are rendered foundational to meaning and so render further meaning. While I have attempted to distance these discussions from humanist understandings by, for example, denaturalising consciousness as performative, I have doubtlessly created opportunities for different, equally humanist, aporia. The patterns of knowledge I have picked up, reformed, and sometimes dropped, thus beg to be further refashioned, pulled in different directions, and undone. After all, if the posthumanism I have identified is anything, it is an iterative project. Rather than a radical and abrupt departure from what the human now knows itself to be, it is from examining and unpicking the ways by which "human" is stabilised and scaffolded (the specific differentiations which not only underpin but also *think* the human and, by implication, the post/human) that there might gradually follow a posthumanist *re*thinking, or a worlding of different differing.

WHAT REMAINS?

We cremated my father. The process, I was startled to learn, is a bit more involved than simply placing a body within a large furnace and sweeping out ashes. Once the fleshy organic parts of a body are burned away in a retort, the residual bone matter is pulverised in a cremulator until it is the consistency of coarse sand or gravel. Often referred to as cremains, what is left at the end of this process is wholly inorganic, and mainly comprises calcium phosphate, sodium, and potassium, as well as trace elements of metals. While every batch of cremains has a distinct elemental composition, no batch truly "belongs" to a single person—the retort and cremulator contain residue of previous bodies which mix with subsequent cremations that in turn leave their own residue behind.

Though it might be clumsy, there is an obvious analogy to be made here, in that this heterogeneous assortment of lithic elements does not ever refer only to itself. Made up of a life that no longer "is," remains like my father's cremains matter (or, are matter *made to* matter) because they are linked to a presence that is now absent: a life whose death "counts" even while other deaths are deemed culturally irrelevant due to the categorical privileging of specific modes of life over others. This referentiality applies materially, too, as, even ignoring the technical objects required to produce cremains, this heap of ashy bone quite literally carries the differential trace of what came before it and constitutes traces for future cremains. In this fashion, cremains materialise Derrida's writings on the trace, of every element "referring to another element which itself is not simply present," "constituted on the basis of the trace within it of the other elements of the chain or system" (*Positions* 26). Not only do these before-and-after traces unsettle the conceit that these cremains were once my father and only my father, the ontological rupture that is signalled here also suggests my father was never "only" himself. There is, I think, something to be gained by thinking petromorphically about traces. This does not just mean

paying attention to the nonliving elements that are implicated in, but elided from, any referent, reality, event-element, or worlding. Thinking petromophically also requires balancing(?) the interrelations and inter-textual traces of such event-elements without seeking to organise them into teleological unifying narratives that are, invariably, *for* the human.

For now, though, I find myself thinking in terms of "remains." As with my father's cremains, "remains" are what is left after something has been used, removed, or destroyed, and so signify a presence—through near absence—of mattering things. Alternatively, "remains" might be what is surplus, what is left behind, what is forgotten, or what endures. Regardless of the specificity of meaning, remains are never conceived of alone. Remains thus infer a pre-existing system of meaning, as to be recognised *as* remains requires a relational reference to some other thing: a thing which is *almost* but not quite, not entirely, gone. But what are the necessary conditions of this recognition? What once was, what remains, and what is no longer? Who recognises, and from what vantage? With these concerns in mind, perhaps there is a problem obscured by the question of "what remains of humanism in a posthumanist landscape" (Badmington 15).

The problem: remains?

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