

Dystopia: An Ecological History

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Abstract

This dissertation offers a reappraisal of twentieth-century dystopian fiction in the roughly thirty years after World War II by identifying the environmental dimensions of many of the most genre-defining authors and novels of this period. Given the escalating climate emergency and the growing popularity of climate fiction (“cli-fi”), it would be difficult to imagine critical conversations about twenty-first-century dystopian fiction that overlook environmental anxieties in the genre. Yet, in scholarly discussions of postwar dystopian fiction, there is a limiting sense that environmental “themes” emerge only periodically, or are of secondary importance to the genre’s more typically “Orwellian” themes like totalitarianism, propaganda, the Cold War, automation, censorship, and conformism. In contrast, my dissertation shows how dystopian fiction from this period develops in conversation with emerging conceptions of environmental degradation in the anti-nuclear, anti-population growth, and modern environmental movements. By developing a history of dystopian fiction’s mutual imbrication with growing anxieties about ecological degradation, my dissertation shows that texts in the genre have grappled for decades with *socioecological* questions that still perplex us today: can nuclear energy power a safe and abundant future? Should there be hard limits to humankind’s population? How should humans interact with/in non-human nature? If there are ecological limits to economic growth, is humankind (a problematically capacious term) approaching ecological limits? If so, are we (another problematically capacious term) courting disaster?

Over three chapters, I trace the co-emergence of dystopianism and environmentalism in the roughly three decades after World War II as major Western cultural heuristics for thinking about the future. In this historical context, my dissertation puts dystopian novels like George Orwell’s *Nineteen Eighty-Four* (1949), Kurt Vonnegut’s *Player Piano* (1952), Ray Bradbury’s *Fahrenheit 451* (1953), Harry Harrison’s *Make Room! Make Room!* (1966), John Brunner’s *Stand on Zanzibar* (1968), and Ursula Le Guin’s *The Lathe of Heaven* (1971) in conversation with trailblazing environmental texts like Rachel Carson’s *Silent Spring* (1962) and Paul Ehrlich’s *The Population Bomb* (1968). As I will show, dystopian fiction produced during this period was influenced by and participated in debates about nuclear weapons and nuclear energy, overconsumption and overpopulation, and the degradation and disappearance of non-human nature. At the same time, the anti-nuclear, anti-population growth, and modern environmental movements borrowed rhetorical strategies from dystopian fiction to warn about the (in)habitability of the future. In developing these arguments, I draw heavily from primary sources and historical accounts of these movements, utopian and dystopian studies criticism, Marxist ecology and Critical Theory, and a growing collection of scholarship in the Environmental and Energy Humanities that emphasizes the centrality of energy to modern societies. This history will contribute to a better interdisciplinary understanding of how modern environmental thinking is influenced by dystopianism, and how dystopian fiction warns readers about what John Brunner calls environmental “survivability” in an age when the spectre of climate breakdown looms large in the public’s imagination.

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For Buck Matheson, of course.

There is a house in New Orleans / They call the Rising Sun

This dissertation is dedicated to Ralph Matarazzo (1969-2019) and Hugo Matarazzo (2021-)

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Introduction

A New Age

Gregory Claeys concludes his nearly 600-page monograph *Dystopia: A Natural History* (2017) with the pronouncement that dystopia is “a genre, and a concept, whose hour has come. May it flourish” (Claeys, *DANH* 501). And it has. Dystopian novels, films, and TV shows have taken popular culture by storm. Academics, too, have been swept up by these currents. Recent years have witnessed a proliferation of academic publications on wide-ranging topics, cultural concerns, and historical developments related to dystopianism, including, but not limited to, the Cold War, the space race, science, surveillance and the police state, labour and work, violence, Trump(ism), social contract theory, feminism, and affect theory and climate trauma in recent film and literature. Given the ongoing climate emergency and the emergence of new genres like climate fiction (“cli-fi”), it would be difficult to imagine critical conversations about twenty-first-century dystopian fiction that overlook environmental anxieties in the genre. Yet, a single body of work committed to exploring the environmental anxieties of postwar dystopian fiction in the roughly thirty years after World War II in relation to the emergence of the modern environmental movement does not yet appear to exist. Surprising as this may seem, there are two main reasons for this critical oversight. First, in dystopian studies, discussions of environmental anxieties about energy, nuclear contamination, and non-human nature have largely been cast aside in favour of themes that are more commonly considered ‘Orwellian,’ such as totalitarianism, political repression, propaganda, automation, censorship, and conformism. This trend appears to have limited ecocritical readings of postwar dystopian fiction for the simple reason that George Orwell’s *Nineteen Eighty-Four* (1949) “set the stage for all future dystopian

fiction” (Booker, “SF” 173), and critics have assumed that Orwell’s concerns were not ecological. So, if Orwell’s novel can’t be read ecologically, then how could its *Orwellian* imitators? In contrast, I show that ‘Orwellian’ anxieties *can* and *should* be read ecologically, and for this reason I have chosen to begin this ecological history of postwar dystopian fiction with Orwell’s genre-defining book.

The second and related reason for the lack of ecological readings of dystopian fiction from this period is the near consensus in critical discussions of dystopian fiction that when environmental themes *do* emerge in the genre, they do so only at specific (and intermittent) points in time. With few exceptions, it is assumed that environmental anxieties emerge in the 1970s and then reemerge with renewed vigour in the twenty-first century (Claeys, *DANH* 447; F. Buell, *Apocalypse* 227-228). This is not entirely the fault of critics of dystopian fiction, however, as environmental histories often neglect to emphasize the historical linkages between the emergence of the modern environmental movement, mass opposition to the nuclear bomb, and anxieties about human overpopulation in the 1940s, 1950s, and 1960s. I have addressed this second limitation in the existing criticism by writing a dissertation that traces the co-emergence of dystopianism and environmentalism in the roughly three decades after World War II and shows how all of these concerns are interconnected. In *Dystopia: An Ecological History*, I argue that many of the most defining dystopian authors and novels of this period, from Orwell’s *Nineteen Eighty-Four* onward, engaged in debates about the environment and the future, such as the viability of a nuclear-energy powered future, the extent to which the social and ecological dangers of overpopulation were real or imagined, and whether or not the West’s increasingly advanced consumer capitalist culture could continue to indefinitely stave off ecological catastrophe through technological innovation. At the same time, the anti-nuclear, anti-population

growth, and modern environmental movements borrowed rhetorical strategies from dystopian fiction to warn about the (in)habitability of the future.

In developing these arguments, I draw from primary sources and historical accounts of these movements; critical scholarship in utopian and dystopian studies; Critical Theory and Marxist ecology; and a growing collection of scholarship in the Environmental and Energy Humanities. This ecological history of dystopianism begins in Chapter One, “Nuclear Futures”, where I read Orwell’s *Nineteen Eighty-Four* (1949), Kurt Vonnegut’s *Player Piano* (1952), and Ray Bradbury’s *Fahrenheit 451* (1953) in the context of contemporaneous debates about nuclear technologies. At the time, proponents and opponents of nuclear weapons and energy adopted the future anterior to convey hopeful and terrifying visions of the future. These novels are typically read as concerned with totalitarianism, censorship, repression, conformism, and mechanization. In contrast, I argue that each of the texts that I read in this chapter engages with the nuclear question and demonstrates how social power and domination require the control, distribution, and expenditure of land, energy, and non-human nature. In Chapter Two, “Hope in Dystopian-Environmental Science Hybrids”, I show that the modern environmental and anti-population growth movements took inspiration from the nuclear debates by framing their arguments in terms of hope, fear, and the habitability of the future. In this historical context, I examine how two landmark works of environmental nonfiction, Rachel Carson’s *Silent Spring* (1962) and Paul Ehrlich’s *The Population Bomb* (1968), consciously adopted dystopian rhetorical and narrative strategies to warn the public about ecological degradation. While these texts are often read as portrayals of environmental apocalypse, I argue that they are better understood as critical dystopias, since they balance fear with concrete strategies and measured hope for the future. Carson, Ehrlich, and the movements that they inspired popularized environmental discourses

and, in the process, were instrumental in instigating a discernible shift in dystopian fiction towards a more explicit engagement with mainstream environmental concerns. I follow this thread in Chapter Three, “Overpopulation Problems?”, where I explore how Harry Harrison’s *Make Room! Make Room!* (1966), John Brunner’s *Stand on Zanzibar* (1968), and Ursula Le Guin’s *The Lathe of Heaven* (1971) were influenced by the emergence and eventual confluence of the modern environmental and anti-population growth movements. I argue that each of these novels expresses anxieties about human population growth, yet they also echo environmentalist and anti-capitalist warnings that the problems facing humanity are not just rising birth rates, but Western consumerism and overconsumption, energy waste and extractivism, and anthropocentric and instrumentalist relationships between human beings and non-human nature. Beginning with Orwell’s *Nineteen Eighty-Four* (1949) and ending with Le Guin’s *The Lathe of Heaven* (1971), this dissertation captures a significant period in the history of the genre: from its most influential progenitor to the first dystopian novel to openly discuss anthropogenic global warming (Trexler 8; Goodbody and Johns-Putra 3).

The Great Acceleration and the Age of Dystopia

The first half of the twentieth century produced the two most destructive wars in world history, the rapid rise of democratic republics and the precipitous fall of European monarchies, unprecedented economic booms and busts, and the emergence of artistic movements that attempted to reconcile the old world with the new. From the perspective of environmental history, however, it is the years *after* 1945 that have more significantly shaped and will likely continue to shape the modern world. During this period, according to environmental historian J.R. McNeill, “the human race, without intending anything of the sort, has undertaken a gigantic

uncontrolled experiment on the earth” (McNeill 4). This “gigantic uncontrolled experiment” refers to the mind-boggling expansion of energy consumption tied to growing economies and growing populations. This is the Great Acceleration. In *The Great Acceleration: An Environmental History of the Anthropocene since 1945* (2016), McNeill and Peter Engelke argue that the postwar period is “the most anomalous and unrepresentative period in the 200,000 year-long history of relations between our species and the biosphere” (McNeill and Engelke 4).

According to their research,

within the last three human generations, three-quarters of the human-caused loading of the atmosphere with carbon dioxide took place. The number of motor vehicles on Earth increased from 40 million to 850 million. The number of people nearly tripled, and the number of city dwellers rose from about 700 million to 3.7 billion. In 1950 the world produced about 1 million tons of plastics but by 2015 that rose to nearly 300 million tons. In the same time span, the quantities of nitrogen synthesized (mainly for fertilizers) climbed from under 4 million tons to more than 85 million tons. (McNeill and Engelke 5)

All of this, they argue, was enabled by an unparalleled access to and expansion of energy sources in the postwar period. The vast expansion in cheap and easily accessible energy “dwarfed all that went before” (McNeill and Engelke 40). This cheap and abundant energy not only “gave people new leverage with which to accomplish things,” but also became “etched . . . into the biosphere through pollution, radiation, reservoirs” (McNeill and Engelke 40). For future generations, McNeill boldly claims, the Great Acceleration “will appear as the most important aspect of twentieth-century history, more so than World War II, the communist enterprise, the rise of mass literacy, the spread of democracy, or the growing emancipation of women” (McNeill 4).

Historians, scientists, environmentalists, literary critics, and artists have attempted to understand and theorize this “most anomalous and unrepresentative period” in human history (McNeill and Engelke 4). Although we are still living in the Great Acceleration, the early decades of this transformative period are a pre-history to the dystopian outlook on the future that dominates twenty-first-century culture. Prominent utopian and dystopian studies scholars like Raffaella Baccolini, for example, argue that the dystopian element has been the prevailing motif in Anglo-American science fiction since at least the 1980s, while Claire Curtis declares that we currently “live in an age where thinking about the end has fully suffused . . . popular culture” (Baccolini 520; Curtis 3). By its nature, speculative fiction extrapolates elements of the present into a hypothetical future. As a *critical* speculative genre, dystopian fiction is especially well-suited to deal with big historical and socioecological problems like those associated with the Great Acceleration. The extrapolative function of dystopian fiction is a form of “cautionary pedagogy” (Thaler 91) that encourages readers to consider the passage of time from the author’s present to the text’s imagined future; or, as Tom Moylan eloquently puts it, to meditate on the “historical tension between what was, what is, and what is coming to be” (Moylan, *Scraps* 25). In this context, it is not difficult to see why there has been a recent proliferation of dystopian texts, films, and TV shows that have tried to grapple with the ongoing climate emergency; the threat of global pandemic; privacy, data, and surveillance concerns; and the renewed spectres of nationalism, fascism, and nuclear war. Claeys provides us with a useful description of the genre and what it can offer critics and audiences: “the new, it warns us, is not always the better. ‘Progress’ is not automatic, and may be dangerous. What benefits the few may harm the many. Machines may devour us. So may corporations or revolutionaries. [. . .] The task of the literary dystopia, then, is to warn us against and educate us about real-life dystopias” (Claeys, *DANH*

501). If the literary dystopia's task—and I would argue, therefore, value—“is to warn us against and educate us about real-life dystopias” (Claeys, *DANH* 501), then it seems even more necessary to understand how the twenty-first-century obsession with the dystopian mode has roots in the immediate years after WWII.

Dystopia has much deeper roots in popular culture than its current vogueish status suggests, reinforced as it has been by ongoing climate and global health emergencies that only a handful of years ago were the stuff of Netflix exclusives and Hollywood disaster porn. Derek Maus, for example, has recently (2020) lamented that while

countless pronouncements in popular media have suggested that the increasingly nationalist politics, climate change, economic instability and regional wars that have thus far marked the twenty-first century have injected dystopian thought into the *zeitgeist*, . . . many of these commentaries have downplayed the extent to which dystopia flourished in earlier periods. (Maus 283)

One goal I have in this dissertation is to counter this troubling presentism by historicizing the relationship(s) between dystopia and emerging popular conceptions of ecological degradation in the postwar period. I hope that this dissertation will not only offer scholars working on similar projects with points of departure to base their own interpretations, but also that my historical interpretation can help safeguard against the sense that dystopianism as a mode can be defined “as little more than trendy communal moping” (Maus 283-284). As Maus helpfully suggests, to make this assumption is to overlook the genre's deeper, historically specific engagement with socioecological issues, “while also disregarding the intrinsic ‘critique of contemporary society expressed in the dystopia [that] implies (or asserts) the need for change’” (Fitting qtd. in Maus 284). Although critics often use the Cold War and associated geopolitical anxieties as key

interpretive frames for reading dystopian fiction produced during the immediate postwar years, I argue that we can identify ecological anxieties in novels from this period by reading these texts as critical responses to the Great Acceleration. By providing an ecological history of dystopian fiction during the immediate postwar decades, I demonstrate that some of the genre's most defining authors and texts have long since grappled with questions that plague us today: is nuclear energy and technology safe and/or viable? Is unlimited energy possible and/or desirable? Are there or should there be hard limits to humankind's population? How should human beings interact with non-human nature? Is humankind (whomever/whatever we signify by this term) approaching ecological limits? These older dystopian texts are not only meditations on their contemporary situations, shaping and shaped by the historical contexts in which they emerge as texts about the future, but they also have the power to influence our ideas today about where we have been, where we are, and where we are headed. In a general sense, then, this dissertation pushes back against the perception that dystopian fiction is nothing more than trendy moping or collective schadenfreude that can be circumscribed by a few key themes and a few key texts.

I argue that we can think of postwar literary dystopias as a type of survival strategy, much like anti-nuclear and modern environmental activism. Stephanie LeMenager's term "genre trouble" is central to this idea (LeMenager 476). "Genre trouble," LeMenager explains,

comes about when the affective expectations we hold for how things unfold, in art and life, do not make sense anymore [. . .]: artistic genres are fraying, recombining, or otherwise moving outside of our expectations of what they ought to be because life itself is moving outside of our expectations for what it ought to be. It is worth considering how life itself begins to encourage new representational regimes. (LeMenager 476)

Peter Fitting has argued that SF emerged in response to such a set of world-altering conditions, including “the scientific transformation of the world beginning around the end of the eighteenth century,” the growing “European awareness of history and the future,” and the “increasing impact of the scientific method and of technological change on people’s lives” (Fitting, “Dystopia” 137). Similarly, I argue that dystopian fiction flourishes in the postwar period as authors and audiences try to come to terms with humankind’s newfound capacity to render the planet uninhabitable through nuclear and environmental apocalypse. Of course, there are notable pre-war dystopian stories like E.M. Forster’s “The Machine Stops” (1909) and novels like Jack London’s *Iron Heel* (1908), Yevgeny Zamyatin’s *We* (1924), Aldous Huxley’s *Brave New World* (1932), and Arthur Koestler’s *Darkness at Noon* (1940), yet “a clear dystopian tendency” emerges in the postwar period with what Kingsley Amis referred to as the “new maps of hell” (Amis qtd. in Moylan, *Scraps* 122). Keith Booker and Moylan have both noted that postwar SF is overwhelmingly dystopian in character, marking a shift in a genre that “had long been characterized by a strongly utopian slant” (Moylan, *Scraps* 122; Booker, *Impulse* 91). One way to think about this shift in the postwar period is that dystopianism—as a genre and “representational regim[e]”—has adhered more closely than utopianism to readers’ understanding of the present and expectations about the future (LeMenager 476). For Booker, dystopia overtakes utopia during the postwar period because the faith in the utopian possibilities of science and technology that had been “so central to Western utopian dreams had now brought about the advent of nuclear weapons with the concomitant threat of the sudden end of civilization” (Booker, *Impulse* 91). Similarly, Andrew Hammond argues in *Cold War Stories: British Dystopian Fiction, 1945–1990* (2017) that utopian images of the future were increasingly at odds with readers’ lived experiences after World War II: “With the memory of the Holocaust,

the reports of Stalinist atrocities, the atomic strikes on Nagasaki and Hiroshima and the insidious spread of Soviet and US hegemony, the world seemed ripe for calamity on a scale hitherto unimaginable” (Hammond 6). Dystopia, in other words, comes fully into its own as a literary genre precisely as utopia as a political orientation and literary mode begins to “fray,” no longer appearing to be an appropriate “representational regim[e]” (LeMenager 476). To adapt Theodor Adorno’s expression: no utopia after Auschwitz . . . Dresden, Hiroshima, Nagasaki.

The Existing Field

Some critics like Maus, Booker, and Hammond have focused on how Cold War anxieties shaped dystopian fiction in the years after World War II, which in most cases was “written in the United States or Great Britain and attempt[ed] to distil a useful lesson for the future from the horrors of what was then the immediate past” (Maus 292). While this critical tendency to interpret dystopian fiction produced during the 1940s and 1950s as warnings about “what came before is fairly incontrovertible,” there is a general sense in the criticism that after 1950 the genre witnessed a “gradual thematic diversification” (Maus 292, 291). Claeys, for example, argues that after 1950 there is a shift away from the “the totalitarian political dystopia which is chiefly associated with the failure of utopian aspirations, and which has received the greatest historical attention” (Claeys, *DANH* 5). Although his “chief concern” in *Dystopia: A Natural History* is the totalitarian political dystopia, he does acknowledge the existence of environmental and technological dystopias as two main “forms of the concept” after 1950 (Claeys, *DANH* 5). However, in his account, “the spectre of environmental degeneration, later transmuted into a discourse on climate change, with a potentially catastrophic outcome, emerged in the 1970s” (Claeys, *DANH* 447). A wide range of critical studies on dystopian fiction in recent years has

corroborated Maus's and Claeys's observation that dystopianism diversified in the postwar period, including work on the genre in the context of the Cold War, the space race, labour and work, science, surveillance and the police state, violence, Trump(ism), social contact theory, feminism, and affect theory and climate trauma. As yet, however, there is no comprehensive study that examines how ecological anxieties in dystopian fiction emerged specifically in conversation with the postwar environmental movement.

As I suggested above, I suspect that this is the case for a few reasons. The first is a general trend in writing in the genre that spread to the criticism: what Booker describes as Orwell's "gravitational pull" (Booker, "SF" 172). He argues that *Nineteen Eighty-Four* was "one of the most important cultural texts (science fiction or otherwise) of the Cold War" and exercised "a gravitational pull that would help warp imaginative visions of the future toward the dystopian pole for more than half a century" (Booker, "SF" 172). Exemplifying what Claeys refers to as the "political dystopia," Orwell's 1949 novel has become, in many ways, a synecdoche for the genre (Claeys, *DANH* 5). Unsurprisingly, criticism written on novels published during the early Cold War years has tended to focus largely if not exclusively on *political* anxieties related to USSR-West relations; the ideological struggles between capitalism, socialism, and communism; totalitarianism and governmental control, coercion, and surveillance. As I will explain in Chapter One, "Nuclear Futures", some of this criticism has mentioned the threat of nuclear annihilation, but it has tended to view that threat as political rather than ecological: rather than explore the ecological dimensions of nuclear weapons and energy, critics have framed the nuclear threat as an extension of Cold War politicking, or as a symbolic opportunity to regenerate decadent and degraded Western culture (Booker, "SF" 171; Stableford "SF" 131). I have chosen to read Orwell's novel first in Chapter One because I believe that the overwhelming tendency to ignore

the ecological dimensions of his genre-defining novel has contributed to the lack of ecological readings of dystopian fiction during this period. I argue that interpretations that focus solely on the ‘political’ dimensions of the novels I read in Chapter One are based on a failure to recognize how political forms of control and domination are dialectically related to what we think of as ecological concerns like land use and energy production and consumption. As I explain, recent work in Marxist ecology and the Energy Humanities theorizes these dialectical relations, and so helps us recognize that the concerns of dystopian fiction have always been *socioecological*.

A second potential explanation for why an in-depth historical analysis of the ecological anxieties of dystopian fiction during this period does not yet exist is because of the related tendency in the existing criticism to periodize and group ostensibly ‘environmental enough’ texts into sub-genres, rather than recognize that environmental anxieties have always been integral to the genre. In this context, twentieth-century dystopian fiction is often categorized thematically with a loose corresponding periodization: fears of totalitarianism (1920-1950); anxieties about communism and socialism (1945-1960); control-societies based on automation and mechanization, often resulting in widespread social collapse (1950-1960s); atomic weapons, overpopulation, and mass planetary destruction (late-1960s-1970s), feminist and critical dystopias (1980s); corporate domination and fertility crises (1990s); looming eco-collapse and the future after the death of nature (2000s-present). Though this periodizing impulse does provide the benefit of identifying emergent themes and major shifts in the genre, it also reflects the often-oversimplifying impulse in literary studies more generally to compartmentalize literature into neat periods, movements, and regions. Unfortunately, this has contributed to dystopian studies’ complicity in treating ‘the environment’ as a literary ‘theme’ or ‘concern’ that

emerges only in certain historical periods (and in others, it follows, it is not a concern at all).¹ In contrast, my readings push back against the understandable if misguided impulse towards periodizing texts in the genre by assuming that all the novels in this dissertation, regardless of when they were written, *inevitably* participate in the broader environmental discourses of their time, much as they would with discourses of class, race, and gender/sex/sexuality.

A related issue with the existing criticism is the also understandable impulse to create subcategories and minor canons, which in this case means labelling certain dystopias as ‘green’ or ‘environmental.’ Unfortunately, such tendencies toward genre-forming and canon-building are processes of both inclusion *and* exclusion, which intentionally or unintentionally makes somewhat arbitrary distinctions between texts and authors that/who are or are not ‘green’ or ‘concerned’ about the environment. Eric Otto’s theoretically insightful *Green Speculations* (2012), for instance, is a good example of this kind of work. Here, he identifies theoretical links between a handful of SF texts (not all dystopias) and radical ecological philosophies. Otto explains that “*Green Speculations* highlights science fiction works that can be read as constituting a subgeneric category of science fiction—an environmental science fiction—and that share with transformative movements an interest in environmental degradation and its origins” (Otto 4). However, I am not convinced that it is productive to label some texts as “interest[ed] in environmental degradation and its origins” and, implicitly, others as ‘not interested’ based on the presence of (implicitly sanctioned) generic tropes, figures, or themes in a given work. If—and here I agree with Otto—we must reflect “more deeply on ideological structures that without accident require us to forget about nonhuman nature and our

¹ See Gregory Claeys otherwise excellent and encyclopedic *Dystopia: A Natural History* (2017). Keith Booker follows a similar chronological format in *The Dystopian Impulse in Modern Literature: Fiction as Social Criticism* (1994).

uncontestable embeddedness in it” (Otto 18), then it seems even more important to identify the ecological elements, anxieties, and contents of texts that *are not* self-consciously and/or obviously ‘about’ the environment. Few scholars today would accept the hypothesis that a text does not engage with the social discourses of class, race, or gender/sex/sexuality simply because it does not appear to; nor should we accept the argument that texts that do not portray ecotopian paradises or eco-dystopian hellscapes are, therefore, unengaged with environmental discourses.

Rather than identify the most self-consciously ‘ecological’ novels during the period, I have decided to read the novels in this dissertation from an environmental-historical perspective that, at its core, maintains the Marxist ecological injunction that society and non-human nature are unassailably and dialectically related: the political and socioeconomic concerns in these texts are also and necessarily environmental. Here, my thinking aligns with recent work by Environmental and Energy Humanities scholars like Graeme MacDonald and Adam Trexler. MacDonald, for example, insists “that all (or perhaps any) fictional work is a veritable reservoir for the energy-aware scholar” because “we all ‘live’ an extractive culture, regardless of our cognitive connections or geographic proximity to refineries, mineshafts and drill-zones” (MacDonald 8-9). Similarly, Trexler argues that in an age of accelerating global warming caused by the “greenhouse effect,” “*all* contemporary fiction could be said to reflect a condemned ‘greenhouse culture’” (Trexler 27, emphasis original). To be sure, declaring literature’s inevitable embeddedness in historical and socioecological structures (such as energy regimes or the ongoing multi-century climate emergency) must be accompanied by the tiring work of keeping front and centre how environmental concerns have taken different shapes over time and across different places. This is necessary because, as Lance Newman argues, “nature writing is not a stable form of reaction to a stable problem (the ideologically-driven human domination of

nature). It is a dynamic tradition of response” (Newman 18-19). Similarly, in arguing that dystopian fiction is inherently ecological, this dissertation recognizes that non-human nature and ‘the environment’ are not stable concepts, but instead must be historicized. I do this work by attending to the ways in which each of the novels I discuss engages consciously and/or unconsciously with contemporaneous socioecological debates circulating in political, scientific, and popular culture. This will allow me to contribute to what Lawrence Buell describes as an invaluable function of literature: “that literature and other expressive media might act as carriers of environmental memory over against the inertial force of what the environmental psychologist Peter Kahn, Jr., has called ‘environmental generational amnesia’” (L. Buell, “Memory” 96). My hope is that this dissertation will be one among many projects that work to prevent the type of “environmental generational amnesia” that may occur if critics fail to recognize and/or assume the absence of environmental anxieties in dystopian fiction.

Time, Historicity, and the Future Anterior

Dystopian fiction, ecocritical writing, and environmental activism are responses to a perceived threat to our collective security. While it may not be groundbreaking to suggest that environmental rhetoric contains apocalyptic undertones, it is nonetheless valuable to explore how environmental writers and activists adopt similar rhetorical strategies to authors of dystopian fiction with the shared goal of warning the public about the potential for undesirable futures. Cheryl Glotfelty’s general remarks about ecocritical work in the introduction to the landmark anthology *The Ecocriticism Reader* (1996) emphasizes that

most ecocritical work shares a common motivation: the troubling awareness that we have reached the age of environmental limits, a time when the consequences of human actions

are damaging the planet's basic life support systems. We are there. Either we change our ways or we face global catastrophe, destroying much beauty and exterminating countless fellow species in our headlong race to apocalypse. (Glotfelty XX).

Here, Glotfelty introduces three concerns that I argue authors of dystopian fiction share with important environmental thinkers like Rachel Carson, Rob Nixon, and Andreas Malm: the strange temporality of environmental crisis; the systemic nature of ecological problems; and humankind's capacity to intervene to prevent an undesirable future.

A major theoretical link between environmentalism and dystopianism as critical strategies for preventing undesirable futures is an understanding of time as more than simply linear. Carson theorized that part of capitalism's ecologically destructive nature is its relationship to time, as she famously declared that "given time—time not in years but in millennia—life adjusts, and a balance has been reached. For time is the essential ingredient; but in the modern world there is no time" (Carson 6). For Carson, the capitalist mode of production operates according to an accelerated temporal rhythm that outpaces non-human nature's ability to adapt to anthropogenic harms. In opposition to capitalism's destructive and accelerated linear temporality, environmental scholars have called for historical analysis that accounts for the dialectical nature of the past, present, and future in relation to the braided (ongoing) history of human exploitation and ecological degradation. Nixon, for example, is committed to thinking about time beyond the logic of liberal developmentalism by unsettling straightforward notions of progress that are associated with modernization, writing that "we need to bear in mind Faulkner's dictum that 'the past is never dead. It's not even past'" (Nixon 8). Malm has similarly argued that it is plainly inconceivable to address the ongoing climate emergency and the injustices of the past without the ability to understand the present environmental situation as the

culmination of past actions. He has written extensively on the long history of the fossil fuel economy and how we continue to live in the wake of the first coal-fired steamships:

now more than ever we inhabit the diachronic, the discordant, the inchoate: the fossil fuels hundreds of millions of years old, the mass combustion developed over the past two centuries, the extreme weather this has already generated, the journey towards a future that will be infinitely more extreme—unless something is done now[.][. . .] History has sprung alive, through a nature that has done likewise. (Malm, *Storm* 11)

Following Carson, Malm asserts that the climate emergency evinces a strange temporal relationship: fossil fuel-driven industrial capitalism has burnt up hundreds of millions of years of fossilized plant and animal matter in a matter of centuries, giving the appearance of both history and nature springing alive into action. Another way of thinking about this weird relationship is that fossil fuel-driven global warming reveals the tension between the past, present, and future: fossilized matter (the past) is weaponized by corporations and petro-states (the present) against the possibility of a stable climate (the future). If Nixon and Malm are correct that the past is never *really* past where climate is concerned, then Environmental Humanities work that connects the past with the present and the future seems all the more necessary. This work seems especially necessary in the case of postwar dystopian fiction where the authors are principally concerned with the future of humankind—a future, which it just so happens, we currently inhabit.

Dystopian fiction, like the environmental insights above, encourages a recognition of “the historical tension between what was, what is, and what is coming to be,” and in this sense helps us “think the present historically” (Moylan, *Scraps* 25; Jameson, *PoMo* IX).² This common

² Much like Moylan argues that dystopian fiction is a historicizing genre, Donald Worster believes that we must “include ecology in the purview of historicism, which holds that all cultural events, beliefs, and institutions are valid relatively, suited to or at least rooted in their times. . . . Any attempt to so divorce nature from the rest of the human

ground is essential for understanding the undertheorized similarities between the speculative accounts of dystopian fiction and the speculative accounts of environmental writing in the postwar period. An emphasis on the present as always already historical, which also means that the future is always already coalescing around the present, enables a critical understanding of existing socioeconomic structures as deeply engrained and systemic. This, Moylan argues, is “dystopia’s foremost truth”: “its ability to reflect upon the causes of social and ecological evil as systemic” (Moylan, *Scraps* XII). The history that I develop in this dissertation is both synchronic and diachronic, examining how dystopian fiction engages with contemporaneous environmental debates and how the genre’s relationship to these debates shifts over time. This will be clear in my discussion of how Orwell, Vonnegut, and Bradbury were engaged in post-Hiroshima and Nagasaki debates about nuclear weapons and energy, and how modern environmental and anti-population growth movements in the 1960s also have roots in these earlier debates. In turn, these earlier dystopian texts and popular movements shaped how Harry Harrison, John Brunner, and Ursula Le Guin would frame questions about ecological limits in their novels in the late 1960s and early 1970s.

Dystopian and environmental rhetoric both adopt the grammatical structure of the future anterior as a formal logic: the future anterior “transforms the present into the object of a future memory” (Currie qtd. in Teittinen 353). The future anterior is grounded in “the possibility that an event, in the light of some future consequence, development or insight, will have been in some significant sense different from our current estimate” (Teittinen 351). Part of what enables fictional dystopian representations and science-based environmental warnings about the future to

condition leads to a doctrine of alienation, where the science must occupy one realm and the social and historical consciousness another” (Worster 345).

complement each other is that we *cannot* have a complete picture of what the future will look like. Despite this uncertainty, the future anterior can be understood as a rhetorical strategy for ascribing concrete moral and ethical meaning to our actions in the present by exploring the generative tension between the present and the future. Absolute judgments on the present must be withheld, as Jouni Teittinen explains, because the present acquires its full meaning only in light of what will come to pass: “the present acquires its form only by way of its future: while that future itself is yet to exist, it has to be speculatively posited in order to tap into the fundamental logic of ‘what will have been’ (future anterior)” (Teittinen 349).

The essence of dystopian writing is its use of the future anterior to make critical normative judgements on the present from the position of an imagined future. While this may sound somewhat abstract, I argue that this can be understood as the logic of environmental warnings that urge action before it is too late—before the future time in which *it will have been too late* to act. For example, in the warnings from the Intergovernmental Panel on Climate Change (IPCC) reports that ‘we’ have x number of years to limit emissions by y amount. This logic implies that at some undefined point in the future it will have been too late for ‘us’ to meet these goals—the prescribed action in $x+1$ years will have been too late. The rhetorical and logical emphasis in this claim is that people will look back from this specified point in the future and think *they/we should have acted sooner*. This is a rhetorical strategy for mobilizing action *now* by warning that any delay *may come to be* the cause of our downfall; may push us too close to a future when *it will have been too late*.

The logic of the future anterior is not limited to fiction, but rather is present within the inevitably speculative elements of environmental warnings, scientific modelling, and risk analysis. As Molly Wallace has noted, the Doomsday Clock offers another clear example of the

future anterior in action. The Doomsday Clock was created in 1947 by the Bulletin of Atomic Scientists, who were part of a broader coalition of scientists attempting to rid the world of nuclear bombs, or as Lawrence Wittner describes, were part of a “conspiracy to preserve our civilization by scaring men [*sic*] into rationality” (Wittner 13). The Doomsday Clock tracks humankind’s nearness to annihilation, which is measured metaphorically in terms of minutes to ‘midnight’. In addition to nuclear weapons proliferation, the types of threats to humankind that have affected the movement of the clock include environmental threats, regional conflicts, and the spread of disease (including COVID-19). The speculative “strategy of the Clock,” Wallace writes,

is the strategy of the future anterior—we have never been at midnight, so we cannot in fact know our proximity to the end. We will have been at three minutes to midnight; whether we are there now is an act of speculative imagining, whatever sort of scientific calculations might be involved. [. . .] The future anterior, as the Doomsday Clock reminds us, is not really about the future; it is about the present as someone’s past (Wallace, *Risk* 22).

Here, Wallace encourages a way of thinking about time that is shared by dystopian fiction and by environmental thinkers like Carson, Nixon, and Malm: time as an unfolding and dialectical process, in which normative judgments about the past, present, and future are subject to change as time progresses, thereby challenging the logic of linear temporality. That the present is the future’s past is a necessary condition for dystopian fiction as a mode, and it is also why environmentalists have argued that burning fossil fuels is an intergenerational crime, as the Hague and other courts have started to recognize. Ultimately, the speculative logic of dystopian fiction, environmental warnings, and the Doomsday Clock represent a shared sense that the

future is a mirror—if a somewhat distorted one—through which we will be forced to view ourselves, and yet it is through an imaginative and rhetorical ‘looking backwards’ that we might pre-empt the worst to come.

Dystopia and Environmentalism

The affinities between dystopianism and environmentalism are more than purely theoretical, however, and other critics have noted the exchange between these two fields during the decades following World War II. Ursula Heise, for example, has noted how speculative fictional accounts of ecological catastrophe borrowed from scientific modelling, while scientific representations of an undesirable future adopted the speculative mode typical of dystopian fiction. “The two types of approach were not completely separate at the time,” she writes, because there was significant back and forth between fiction authors and their scientific counterparts:

on the one hand, Paul Ehrlich illustrated his statistic predictions with three science fiction scenarios in *The Population Bomb*, and he wrote prefaces to Harry Harrison’s novel *Make Room! Make Room!* [and] the *Voyages* anthology [. . .]; on the other hand, Harrison’s novel and the short stories in *Voyages* have bibliographical references that include not only literary but also scientific and sociological works on ecological and demographic problems. (Heise 72)

One explanation for the overlap between dystopianism and environmentalism in the postwar period is the accelerating degradation of global ecosystems that has led to a pervasive sense of ecological crisis: “a climate conducive to dystopia, the warning of what will happen if...” (Levitas 225). Ruth Levitas compellingly explains this close relationship between dystopianism

and environmentalism by appealing to the simple fact that “dystopias are not necessarily fictional in form; neither predictions of the nuclear winter nor fears of the consequences of the destruction of the rain forests, the holes in the ozone layer, the greenhouse effect and the potential melting of the polar ice caps are primarily the material of fiction” (Levitas 225-226). Expanding on this insight, my dissertation examines both literary dystopias and dystopian rhetorical strategies in popular environmentalist writings to show *how* and *to what effect* dystopianism and environmentalism have influenced each other.

A second and related reason why dystopianism and environmentalism seem to cover similar ground is that both are activist in orientation by encouraging and/or discouraging particular ways of thinking, acting, and being. Environmentalism, like dystopia, adopts the spectre of crisis as a catalyst for socioecological change, which for environmental historian Ramachandra Guha is the essence of modern environmentalism. Environmentalism, he writes, is not just “the literary appreciation of landscapes and the scientific analysis of species,” but “must be viewed as a social program, a charter of action which seeks to protect cherished habitats, protest against their degradation, and prescribe less destructive technologies and lifestyles” (Guha 3). Like environmentalism, literary dystopias can also be a potent political tool in protecting against undesirable futures. Scholar and anthropologist Stine Krøijer has recently (2020) argued that political and social movement theorists have overlooked dystopia as a category of social analysis. “In the celebration of the diagnostic qualities of the concept of utopia,” Krøijer writes, scholars and practitioners “have been ignoring the ways in which dystopia works as a powerful technology for drawing people together” (Krøijer 50). For Krøijer, dystopia is a more useful way of thinking about the collective future than utopia, since the reality of the ongoing climate emergency, to say nothing of renewed concerns about nuclear war and the

still ongoing COVID-19 pandemic, is arguably more dystopian than anything Orwell could have imagined. In this sense, dystopianism appears to be a more appropriate survival strategy than utopianism “at our present historical conjuncture where utopias seem to have disappeared from mainstream political life” (Krøijer 48). However, as my project demonstrates, the usefulness of dystopianism as a political technology and heuristic for understanding our collective fears and anxieties is not only a recent development, but has long been evident in anti-nuclear and environmental discourse, writing, and activism, as well as in dystopian fiction itself.

The overlaps between dystopianism and environmentalism in the postwar period can also be explained by their shared rhetorical commitments to critical diagnoses and speculative warnings. Lisa Garforth explains that “modern environmentalism has always depended on projected planetary futures to make its case, and those futures have always been in the most basic of senses fictional: imagined, created, narrated” (Garforth, “EF” 242). Crucially, the modern understanding of ‘the environment’ as an object of analysis emerged as a response to crisis in the immediate postwar years. According to Libby Robin, Sverker Sörlin and Paul Warde,

in the 1940s and 1950s the idea of ‘the environment’ and the crisis about its future emerged together. Prediction that the whole global system was falling into degradation was co-determined with the very discovery of that system. [. . .] The idea of the environment oriented thinking toward the future and became inextricably linked with crisis, a concept constructed in part by prediction and in part by fear of future catastrophe. (Robin, Sörlin, and Warde 6-7)

In their account, scientific predictions about the environment could hardly be anything but dystopian, as “[p]rediction that the whole global system was falling into degradation was co-determined with the very discovery of that system” (Robin, Sörlin, and Warde 6-7). If the

discovery of the global environment in the 1940s was the discovery of a “whole global system falling into degradation,” then it only makes sense that predictions about the future of this system would be coupled with warnings about where this system might be headed. This suggests that fears about *real-life dystopias* are at the core of modern environmental thinking. Here, scientific and dystopian predictions about the future begin to blend, as both become modes of speculating upon the future from a highly precarious present. This likely sounds familiar: climate scientists no longer debate *if* the future will be bad, but about *how* bad it will be (1.5°, 2.0°, 2.5°...?).

In the 1940s and 1950s, the advent of nuclear bombs and nuclear energy generated debates about whether a nuclear future was cause for hope or despair. Often, as I explain in Chapter One, dreams of “electrical energy too cheap to meter” and nightmares of living like “troglodytes underground as being the only hope of survival” depended heavily upon speculative and fictionalized accounts of the future (Strauss 9; Attlee qtd. in Hammond 7). Similarly, the popularization of environmental concerns in the 1960s was filtered through and aided by science fictional representations of environmental problems. Environmental science was often disseminated to the public in tandem with science fictional representations of these issues, especially, as Garforth notes, in Carson’s “foundational text” and “some of the science fiction texts that accompanied the announcement of environmental crisis in the 1960s and 1970s—in particular the dystopian narratives of overpopulation and pollution that formed part of the trope or metaphor of ‘Spaceship Earth’” (Garforth, “EF” 241). For this reason, Garforth explains elsewhere, “environmental thought since the late 1960s has been strongly associated with prophecies of doom, apocalyptic predictions, and dystopian scenarios” (Garforth, “Beyond” 393). In some instances, mass support for environmental campaigns, such as Zero Population Growth (ZPG), were significantly aided by the prior representation of these issues in speculative

fiction. Harry Harrison, for example, had popularized overpopulation concerns in his novel *Make Room! Make Room!* (1966) two years before Ehrlich's *Population Bomb* hit the presses in 1968. By tracing the theoretical and historical interconnections between literary dystopias and scientific and activist warnings from the late 1940s to the early 1970s, this dissertation shows that dystopian fiction has always been part of an interdisciplinary, dialectical, and inherently ecological conversation.

Theoretical Foundations

The historical perspective in this dissertation is furnished by research on environmental history of the period now commonly referred to as the Great Acceleration and by primary and secondary sources from the anti-nuclear, environmental, and anti-population growth movements. By analyzing each novel in the context of contemporary ecological discourses, I demonstrate that dystopian fiction produced during this period was more engaged with environmental thinking than critics tend to assume. The theoretical framework I have developed blends these historical materials with existing criticism on dystopian fiction, and with what I argue are the complementary elements of Marxist ecology, Critical Theory, and recent work in the Environmental and Energy Humanities. These three schools of thought overlap significantly in their investigations of how human societies relate to non-human nature; how economic structures and social relations among human beings are mediated by non-human nature; how capitalism as a growth-based global economic system reduces human beings and non-human nature to a series of inputs and outputs; and how the past, present, and future of human societies are inextricably bound up with how those societies treat non-human nature. Each of these schools of thought will

help me identify and theorize connections between postwar dystopian fiction and the burgeoning discourses of modern environmentalism after World War II.

One of Marxist ecology's most foundational assumptions is that non-human nature—including land, water, plants, animals, minerals, and energy—plays a central role in Karl Marx's critique of capital. Non-human nature is central to his understanding of how value is produced within a capitalist system.³ For Marx, human labour and non-human nature are the two sources of value, as he famously argues in *Capital* (1867) that

a material substratum is always left, which is furnished by Nature without the help of man. The latter can work only as Nature does, that is by changing the form of matter. Nay more, in this work of changing the form he is constantly helped by natural forces. We see, then, that labour is not the only source of material wealth, of use-values produced by labour. As William Petty puts it, "labour is its father and the earth its mother." (Marx, *Capital* 309)

Here, Marx is writing against a flawed assumption in liberal political economy that reduces non-human nature "to a mere 'free gift . . . to capital' to be used and 'abused' at will" (Marx qtd. in Foster and Clark, *Robbery* 36). Instead, for Marx and Marxist ecologists, labour and non-human nature are indissolubly connected. Not only is labour "constantly helped by natural forces" (Marx, *Capital* 309), but as he explains in *The German Ideology* (1846), the way that societies "produce their means of subsistence depends first of all on the nature of the actual means of subsistence they find in existence and have to reproduce" (Marx, *German Ideology* 150). It

³ For Marx, the whole process begins with so-called primitive accumulation, which in his critique of capital begins with the theft of land: "nothing else than the historical process of divorcing the producer from the means of production; . . . [t]he expropriation of the agricultural producer, of the peasant, from the soil, is the basis for this whole process" (Marx, *Capital* 432-433).

follows, then, that if it is our character as human beings to reproduce the social world through the mixing of labour with “the actual means of subsistence [we] find in existence,” then the entire basis of human social reproduction is itself dependent upon non-human nature. This relationship is what John Bellamy Foster and Brett Clark refer to as a “social metabolism”: “the real material relation between nature and humanity formed by the labor and production process” (Foster and Clark, *Robbery* 19). When this ‘social metabolism’ is characterized predominantly by human beings exploiting non-human nature, “ecological or metabolic rift[s]” emerge: “climate change is only one of these, and the others are ocean acidification, stratospheric ozone depletion, the nitrogen and the phosphorus cycles, global fresh-water use, change in land use, biodiversity loss, atmospheric aerosol loading, and chemical pollution” (Foster, Clark, and York 9, 14).

The capitalist expropriation of non-human nature—“the treadmill of capitalist accumulation”—is based on the conviction that non-human nature is itself worthless (i.e., has no inherent value) until human beings appropriate it for economic purposes (Foster, Clark, and York 9).⁴ David Harvey critiques this belief as a form of “Cartesian thinking [that] wrongly constructs capital and nature as two separate entities,” and instead implores us to recognize that non-human nature is not *valueless* and *external* to capitalism. Not only are human beings dependent upon non-human nature, but capitalism and non-human nature are trapped in an ecologically disastrous dialectical relationship “within which both nature and capital are constantly being produced and reproduced” (Harvey 247). This is why there is no ‘outside’ of the ongoing climate emergency. This is important because it is an injunction to acknowledge that capitalism both

⁴ As Marx suggests, this act is the originating point of capitalism. This misguided assumption about nature as a free gift that is valueless without human labour is also the basis of liberal conceptions of private property, which we can identify in John Locke’s understanding of property: “men as a whole own the earth and all inferior creatures[.] . . . [W]hen he takes something from the state that nature has provided and left it in, he mixes his labour with it, thus joining to it something that is his own and in that way he makes it his property” (Locke 11).

uses non-human nature in ecologically destructive ways and reproduces what Val Plumwood refers to as “the backgrounding of nature”: “the denial of dependence on biospheric processes, and a view of humans as apart, outside of nature, which is treated as a limitless provider without needs of its own” (Plumwood 21). With all of this in mind, the theoretical insights from Marxist ecology will be useful for me in two main ways. First, they help me think about the material sources of power. The exploitation of human beings and the expropriation of non-human nature are in a bad dialectical relationship where “the expropriation of nature on behalf of the capitalist class becomes the basis for the further expropriation and exploitation of humanity and nature” (Foster and Clark, *Robbery* 33). Criticism on the novels that I read from this period tends to overlook how the social and economic forms of power and domination explored in dystopian fiction are enabled by the control of non-human nature, such as land and sources of energy. For a genre that is concerned with power in its many forms, more attention to how non-human nature is a conduit for power is long overdue. This brings me to my second and related point: that attentiveness to this relationship between social, economic, and ecological power relations requires the recognition that non-human nature in dystopian fiction is not reducible to a set of easily recognizable references or images. Authors may choose to depict non-human nature as arcadian, degraded, neutral, or not explicitly thematized at all; while there is utility in focusing on these representations, I am more concerned with thinking about how non-human nature is present in the narrative and formal operations of the novel: in *all* the social and economic interactions that make up these narratives, but also in how things like energy and physical space contribute to the pace and shape of these narratives.

The “structural affinities” between Critical Theory and SF as “modes of discourse” have been well-established by critics like Carl Freedman, Gerry Canavan, and Booker (Freedman

XIX). In *Science Fiction and Critical Theory* (2000), Freedman emphasizes their shared concern with dialectical thinking (Freedman VX), which Booker also emphasizes in his concluding comments in *The Dystopian Impulse in Modern Literature* (1994) by discussing the dialectical relationship between utopianism and dystopianism: “dystopian thought does not disable utopian thought, but merely acts as a healthy opposing voice that helps prevent utopian thought from going stale” (Booker, *Impulse* 176). For Gerry Canavan, the delicate balance of utopia and dystopia is the core impulse of SF, as he argues that “modernity as the knife’s edge between utopia and apocalypse . . . doubles as a succinct description for virtually every SF narrative ever conceived” (Canavan, “Intro” 2). At the core of this tension is the question of the extent to which scientific and technological progress can be thought of as an ameliorative historical force, which Carolyn Merchant argues is a defining feature of the Frankfurt school’s “analysis of domination”: “they emphasized modernity’s dehumanizing tendencies, its destruction of the environment, its potential for totalitarian politics, and its inability to control technology” (Merchant 14, 15). In *Dialectic of Enlightenment* (1947), Theodor Adorno and Max Horkheimer explain that the contest between the liberatory and oppressive forces of economic progress is at the heart of capitalist modernity: “on the one hand the growth of economic productivity furnishes the conditions for a world of greater justice; on the other hand it allows the technical apparatus and the social groups which administer it a disproportionate superiority to the rest of the population . . . which at the same time press[es] the control of society over nature to hitherto unsuspected heights” (Adorno and Horkheimer XIV-XV). As postcolonial thinkers like Dipesh Chakrabarty and Amitav Ghosh have argued, concrete examples of the tension between the liberatory and oppressive forces of capitalist modernity can be found in unfulfilled promises of fossil fuel development. While “the mansion of modern freedoms stands on an ever-expanding

base of fossil-fuel use,” the climate emergency’s disproportionate effects on economically and racially marginalized peoples suggests that this “mansion of modern freedoms” is not accessible to everyone (Chakrabarty 208). For Ghosh, this is the big secret behind what he calls the Great Derangement: “the patterns of life that modernity engenders can only be practised by a small minority of the world’s population” (Ghosh 92). Like these thinkers and many if not all of the authors I discuss in this dissertation, Adorno and Horkheimer are invested in “exposing the multiple fictions” of Enlightenment narratives of scientific and technological progress (Szeman and Boyer 1).

Like Marxist ecologists, Adorno and Horkheimer lament that scientific rationality and the production of knowledge have been coopted by capital to oppress human beings and exploit non-human nature: “what men [*sic*] want to learn from nature is how to use it in order wholly to dominate it and other men” (Adorno and Horkheimer 4). Yet, where Marxist ecologists’ emphasis tends towards land and labour, Adorno and Horkheimer offer useful insights about how social and ideological structures reinforce exploitative economic structures. They provide a critique of the social domination and alienation that results from the commodification of culture (i.e., when culture itself is turned into an industry) and of how the culture industry helps to maintain the economic and political status quo. “A technological rationale is the rationale of domination itself,” Adorno and Horkheimer write, and “[a]utomobiles, bombs, and movies keep the whole thing together. It has made the technology of the culture industry no more than the achievement of standardization and mass production” (Adorno and Horkheimer 120). Given that dystopian fiction is a popular genre often concerned with science, technology, control, conformity, and domination, their insistence that “world domination over nature turns against the thinking subject himself” is crucial for several of my readings that focus on how material and

ideological instruments and technologies of repression are wielded against both non-human nature and human beings (Adorno and Horkheimer 26). In this sense, much like I will be using insights from Marxist ecology to ground my readings in the material relationships between non-human nature and forms of power, my readings are influenced by Adorno and Horkheimer's emphasis on how power is wielded and maintained discursively through narratives of scientific progress, rationality, and objectivity.

One idea that I refer to consistently throughout this dissertation is the critique of instrumentalism, which is integral to Adorno and Horkheimer's argument that positivist Enlightenment epistemology "is as totalitarian as any system" (Adorno and Horkheimer 24-25). Instrumentalism is a logic of commodification and way of thinking about the world that separates everything from everything else; as an inversion of the first ecological principle that everything *is* related to everything else, instrumentalism reduces human and non-human nature to fungible, abstracted inputs with dollar values within an economic system where exchange value obscures use value and intrinsic value. While this impulse to chop and measure everything under the sun into exchange values might increase the efficiency of markets, it wreaks havoc on ecosystems because "each capitalist must constantly search to expand markets and profits or lose his position in the hierarchy. Under such a regime the economic dimension consumes all else, nature is continually devalued in the search for profit along an expanding frontier, and the ecological crisis follows inevitably" (Kovel 121). This orientation towards the planet (people included) is necessary for a liberal political economy that is undeniably "technocratic, scientific, and even economic [in] character [and] gives credence to a society that measures the quality of life fundamentally in terms of economic growth, control over nature, and the maximization of sheer efficiency in everything we do" (Maniates 40-41). In *Counterrevolution and Revolt* (1972),

Herbert Marcuse warns that this rationality of domination has englobed non-human nature, as “man encounters nature as transformed by society, subjected to a specific rationality which [has become], to an ever-increasing extent, technological, instrumentalist rationality, bent to the requirements of capitalism” (Marcuse 59-60). Crucially, much like Marcuse argues that this “rationality was also brought to bear on man’s own nature,” Horkheimer argues in *Eclipse of Reason* (1947) that *human beings will be subjected to the same processes of rationalization and domination that are applied to non-human nature*: “the human being, in the process of his [*sic*] emancipation, shares the fate of the rest of his world. Domination of nature involves domination of man” (Horkheimer 64). I find Marcuse’s and Horkheimer’s insights useful for theorizing how contemporary authors of dystopian fiction critique how the idea of scientific and technological progress is used to justify the exploitation and manipulation of non-human nature in the name of economic development, increased safety, higher standards of living, and so on. Often, the texts I read in this dissertation frame this compulsion to dominate non-human nature as naïve, dangerous, and self-defeating: the instruments of repression used to control non-human nature are also used against human beings. This is a key theme in the debates surrounding the ethics of developing nuclear weapons (Chapter One) and the efficacy of pesticides and coercive human population control measures (Chapter Two and Three). Written on the heels of the most destructive war in human history, the dystopian texts that I read in this dissertation share Critical Theory’s impulse to “expos[e] the multiple fictions” of capitalist modernity by offering “new representational regimes”: new ways of framing human/non-human nature relations and new ways of thinking about how exploitative ecological relationships reproduce social conflict and alienation among human beings (Szeman and Boyer 1; LeMenager 476).

The Environmental and Energy Humanities research that I find most useful for this project combines complementary insights from Marxist ecology and Critical Theory. Like Marxist ecology, this work is rooted in the conviction that non-human nature is integral to shaping the social, economic, and political lives of human beings. Scholars working within the Energy Humanities specifically, for example, explore how and why aesthetic and cultural representations have tended to conceal the importance of energy to modern societies (Wenzel 157). In this context, Imre Szeman and Dominic Boyer assert the Energy Humanities continues the demystifying work of Critical Theory by revealing the “strong equation of energy and modernity” (Szeman and Boyer 1). They argue that we must rethink “our dominant narrative of the modern” by uncovering how “the expansion of rights and freedoms, the advent of scientific insights and technological innovations, and the ballooning of capitalist economies” are dependent on forms of energy production and consumption that are socially and ecologically harmful” (Szeman and Boyer 1). By illuminating the philosophical biases and socioeconomic forces that contribute to an uncritical association of progress with capitalist modernity, the energy humanities can “[bring] to light the truths of the modern buried beneath the shiny drama of progress that proclaims that each year is better (richer, bigger, freer) than the one before it” (Szeman and Boyer 1). While much of this scholarship focuses on fossil fuels, critics like Christopher Jones have argued that “this state of affairs can be understood as petromyopia: the over-privileging of petroleum accompanied by the relative understudy of other energy topics” (Jones 1). Instead, he proposes that we also consider more carefully “the critical role of electricity in modern society, . . . discussions of renewable energy, and alternative framings of energy topics” (Jones 1). My readings will build on these insights to examine how dystopian novels consciously and/or unconsciously acknowledge the relationship between characteristically

dystopian forms of authoritarian power—surveillance, discipline, segregation, violence—and the physical materials that *power* them. One way that I will accomplish this is by looking at how these dystopian texts contain an “energy unconscious” (Szeman and Boyer 8). To suggest that culture, including literature, contains an “energy unconscious” is to recognize that “our everyday practices and activities have been shaped by energy in a way that we have never fully understood” (Szeman and Boyer 8). In this context, a focus on energy is a helpful way to identify ecological anxieties and preoccupations in dystopian novels that do not appear to be obviously ‘about nature’.

Since energy is an enabling and restricting force, today “we are citizens and subjects of fossil fuels through and through,” yet it is also necessary to consider how human societies’ relationship to energy changes over time, as “different forms of energy enable differently” (Szeman and Boyer 1; Szeman 323-324). Energy Humanities research can help us historicize the relationship between human societies and non-human nature by examining *how* certain energy sources and energy regimes encourage specific kinds of cultural production, social relations, subjectivity, and expectations about the future. Szeman, therefore, proposes that instead of framing “cultural and intellectual periods and the literatures they encompass in terms of movements (e.g., modernism), nations (British modernism), or centuries,” we might organize fiction “in relation to dominant forms of energy” (Szeman 323). By acknowledging that energy is “one of the key conditions of possibility of human social activity” that changes over time, the Energy Humanities is a genuine contribution to historical, materialist, and socioecological forms of cultural analysis (Szeman 323). For literary criticism, this can enable new ways of thinking about how narrative itself is shaped by historically specific economic and socioecological forces. During the Great Acceleration, for example, “the accelerated mobility and intensified

compressions of space and time enabled by carbon-driven capitalism, and petro-technology in particular, have altered the shape and geography of literary plot” (MacDonald 9). Importantly, my dissertation hopes to correct what I have sensed is a narrow framing of dystopian fiction’s predominant preoccupations by showing how *social* concerns about totalitarianism, control, domination, and mechanization are related to the massive expansion of energy and emerging ideas about *ecological* degradation in the postwar period. These concerns in dystopian fiction, in other words, have always been *socioecological*. I will examine how and to what effect the texts I read consciously and unconsciously engage with contemporaneous debates about the promises and perils of nuclear energy; the contamination of the environment by nuclear radiation and petrochemicals; and the growing ecological impacts of expanding human populations and consumer capitalism.

Chapter One: Nuclear Futures

Shortly after Japan’s surrender in 1945, the editors of *Time Magazine* asked if humankind was prepared for the dawn of the Nuclear Age: ““Was man equal to the challenge?” In an instant, without warning, the present had become the unthinkable future. Was there hope in that future, and if so, where did hope lie?” (Rubinson 17). Nuclear bombs and nuclear energy occupied a central role in the political, economic, social, cultural, and literary landscape of the 1940s and 1950s. Both proponents and opponents of these nuclear technologies understood the atom to be integral to their visions of the future, as debates regarding a nuclear future balanced hope and fear in equal measure. The first part of Chapter One discusses how debates about nuclear technologies evoked the future to present two potential outcomes: on one hand our shared planet decimated by nuclear bombs, and on the other a safe and economically prosperous future enabled

by nuclear deterrence and abundant nuclear power that would make “electrical energy too cheap to meter” (Strauss 9). In the second part of this chapter, I argue that George Orwell’s *Nineteen Eighty-Four* (1949), Kurt Vonnegut’s *Player Piano* (1952), and Ray Bradbury’s *Fahrenheit 451* (1953) wade into these contemporary debates in ways that demonstrate myriad forms of ecological awareness and varying degrees of conscious engagement with energy discourses. Like contemporary proponents and opponents of nuclear technologies, each of these texts is preoccupied to a considerable extent with how our social, economic, and political futures are bound up with energy regimes. The social anxieties that critics have typically argued are central to mid-century dystopian fiction—fascism and totalitarianism, surveillance and subjectification, conformism and mass production, mechanization and alienation—assume the availability of stable and expanding sources of energy. I argue that critical discussions about how populations are manipulated, controlled, and dominated in dystopian fiction of this period can benefit from a closer consideration of how energy is integral to this process: What powers the 24/7 telescreens in George Orwell’s *Nineteen Eighty-Four*, or the mega-computers that organize the economy in Kurt Vonnegut’s *Player Piano*? Where does the seemingly endless stream of petrol come from in Ray Bradbury’s *Fahrenheit 451*? How does an abundance of energy shape social relations and relations between human beings and non-human nature in these novels? To varying degrees, each of these novels weigh the productive and destructive power of nuclear energy and the rapid expansion of energy usage that environmental historians now associate with the Great Acceleration. In this context, the fear of nuclear annihilation is balanced with scientific optimism to varying degrees, yet each of these authors carefully considers the promise and peril afforded by the increasingly influential imbrication of science, politics, and energy in modern life.

Orwell's *Nineteen Eighty-Four* engages in contemporary nuclear debates by drawing attention to both the potentially liberating forces of scientific progress and machine-based production, while also depicting the violence enabled by strict controls over energy and caused by nuclear weapons and colonial extractivism. While, as critics have long pointed out, the novel is preoccupied with the totalitarian dangers of surveillance, control, and the erasure of truth and the historical record, I argue that the novel also foregrounds energy as a form of power that regulates both human and human/non-human relations. My reading stems from Marxist ecologist Andreas Malm's insight that the homonym *power* "contain[s] a basic truth" in the English language: "the power derived from fossil fuels was dual in meaning and nature from the very start" (Malm, *Fossil* 18-19). Thinking about *power* in this way provides an opportunity to reflect on the dialectical nature of political power and energy power. The Inner Party's capacity to enforce strict controls on all human thought and behaviour hinges upon a seemingly endless supply of energy, which is then used to surveil, record, and discipline Oceania's subjects. I argue that we can understand the Inner Party led by Big Brother as an energy regime *regime*, which suggests that the expropriation of non-human nature and expenditure of energy is central to the party's unrelenting, twenty-four-hour domination in the novel. Moreover, their domestic power is conditional upon a colonial and extractivist relationship with non-aligned regions of the world in the novel. In this context, the novel clearly depicts the Marxist ecologist principle that the exploitation of people is inseparable from the expropriation of non-human nature.

While Orwell's novel encourages a recognition of how energy and non-human nature are bound up with the exertion of political power, Vonnegut's *Player Piano* interrogates how ideas about socioeconomic progress in the postwar period were often defined by energy consumption. By demystifying the assumption that *more* energy and *more* consumption is necessarily positive,

Vonnegut's novel engages with contemporaries like Adorno, Horkheimer, and Marcuse, and presciently anticipates work in the Energy Humanities that questions how Western lifestyles and notions of freedom and the good life are enabled by cheap and abundant sources of energy. The energy regime *regime* in *Player Piano* consciously acknowledges energy's integral role in their ability to maintain social order and guide a vast, mechanized, and electrified *New Economy*. In this way, the energy regime *regime* presents itself as a historical force that is responsible for what is referred to in the novel as the Third Industrial Revolution: the near-total mechanization and electrification of the postwar American economy. Rather than disagree with most critics who have focused on mechanization as the novel's defining concern, I argue that Vonnegut frames the energy regime *regime*'s obsession with growth and control over the *New Economy* as repressive because it requires the monopolizing and policing of land and energy infrastructure in Ilium. In the novel, this reproduces "creative destruction" (Schumpeter qtd. in Harvey 98), alienating social hierarchies, and segregated living and working spaces. In this way, Vonnegut's concerns about mechanization are not simply political, but are also socioecological.

Like Vonnegut's anxieties in *Player Piano*, Bradbury's mid-century warnings about conformity, massification, and consumerism in *Fahrenheit 451* are socioecological, as these concerns cannot be isolated from the material sources that power the hyperactive and consumerist society he depicts. Although there is a less clear energy regime *regime* in *Fahrenheit 451* than in *Nineteen Eighty-Four* and *Player Piano*, social (power) relations in Bradbury's novel are nevertheless highly mediated by a vast and energy-intensive surveillance apparatus. Most importantly, of all three novels, Bradbury's characters are the clearest example of what I call energy-subjects: characters whose nuclear-threatened, petrol-dependent, and hyperactive lives are dictated by a destructive and accelerated pace of energy consumption. I

argue that the novel's breakneck pace and emphasis on waste constitute a critique of consumer capitalism and the exponential growth of mobility and transportation technologies during the early days of the Great Acceleration. In this context, Bradbury's warnings about consumerism and conformity are inherently socioecological, which I argue is clear in how the novel suggests that consumerism depends upon relationships among humans and between humans and non-human nature that are commodifying, instrumentalist, and exploitative. Contrary to interpretations of the novel that suggest Bradbury's inclusion of the nuclear bomb provides a symbolic opportunity for American cultural renewal, I argue that this destructive act conveys his anxiety that the United States is a wasteful and exploitative "society alienated from itself" that is barreling towards catastrophe (Adorno and Horkheimer 120).

Chapter Two: Hope in Dystopian-Environmental Science Hybrids

Chapter Two begins with a historical account of the pervasive sense of environmental crisis during the 1960s and early 1970s, and of how the modern environmental and anti-population growth movements took inspiration from the nuclear debates by framing their arguments in terms of hope, fear, and the habitability of the future. These movements were responsive to many of the same concerns that I discussed in Chapter One, including the unparalleled scale and intensity of the social, economic, ecological, and demographic changes commonly associated with the Great Acceleration. By the 1960s, it was clear that human beings were threatening to upset planetary ecological systems through nuclear testing, chemical pesticide usage, and a rapidly accelerating increase in global population. These widespread concerns merged to create the modern environmental movement. As many environmental historians have noted, Rachel Carson and the opposition to chemical pesticides were at the fore

of this movement. Like debates about nuclear technologies from previous decades, debates about chemical pesticides pitted hope against fear: proponents hoped that these new technologies would rid the world of transmissible diseases and produce enough food to support the globe's increasingly large and hungry population, while opponents feared that chemical pesticides were threatening the integrity of existing ecosystems and might leave food-insecure populations pesticide-dependent for their main source of calories. In this sense, anxieties about chemical pesticides were intertwined with anxieties about overpopulation, which by the late 1960s became a synecdoche for the growing environmental awareness that human beings were consuming resources, food, land, and energy at a rate that threatened to exceed natural limits. Although some factions of the anti-population growth movement have been rightly accused of caring more about maintaining American standards of living than the integrity of ecosystems and what today we would refer to as environmental justice, some anti-population growth advocates like Paul Ehrlich were genuinely concerned with the ecological effects of chemical pesticides and the unsustainable and unconscionable wealth inequalities within and across nations.

In the second part of this chapter, I close read Carson's *Silent Spring* (1962) and Ehrlich's *The Population Bomb* (1968) to show how they consciously adopted the dystopian mode to extrapolate their greatest ecological fears into narrative form by presenting readers with fictionalized representations of undesirable futures. As two of the most influential voices of the modern environmental movement, their adoption of the dystopian mode is evidence of a key premise of this dissertation: that there are significant rhetorical affinities between the modern environmental movement and postwar dystopian fiction, and that these affinities importantly cut both ways. The apocalyptic tenor of the nuclear debates enabled Carson and Ehrlich to tap into existing sentiment that the world teetered on the brink of annihilation. However, rather than

simply offer apocalyptic *environmental* warnings, Carson and Ehrlich both demonstrate an awareness that seemingly ‘environmental’ issues are better understood as *socioecological* by foregrounding how chemical pesticides and ecological degradation are products of consumer capitalism. By highlighting not only the *effects* but also the socioecological *causes* of ecological degradation, both author-activists are able to provide readers with concrete strategies for avoiding the undesirable futures that they hope to prevent.

While there is little debate about the influence of Carson’s text, there is nonetheless critical disagreement about the purpose and efficacy of its use of apocalyptic rhetoric. Critics have argued that *Silent Spring*’s depiction of impending ecological crisis left audiences without a clear sense of what could be done (F. Buell, *Apocalypse* 168), and that any hopeful alternatives to the terrible future she warns about appear “too late in the book and without the added power of having been forecasted by her opening ‘Fable’” (Killingsworth and Palmer, “SF” 185). I argue, however, that *Silent Spring*’s opening fable makes use of several dystopian techniques to forecast two potential futures: one where humans and non-human nature are threatened by chemical pesticides, and one where relationships between humans and non-human nature are characterized by symbiosis and reciprocity. The remainder of *Silent Spring* draws on meticulous scientific research to warn the reader about an emerging real-world dystopia that, if extrapolated into the future, will result in the thoroughgoing collapse of ecological systems that are indispensable to human and non-human life. By expressing in fictional and speculative form the real-world socioecological concerns that animated the environmental discourse of the 1960s, *Silent Spring* conveys “a dystopian structure of feeling” (Moynan, *Horizons* 150). Importantly, Carson achieves this by rejecting both the utopian promises of the chemical pesticides industry and the anti-utopian threat that the only alternative to chemical pesticides is, as one contemporary critic

dramatically put it, “an invasion of mosquitoes, cattle grubs, boll weevils, other insects, and a plague of grasshoppers [and] terrorised farms” (Wills 108). Instead, she advocates for the use of modern ecocentric scientific methods that are grounded in cooperation and cohabitation with non-human nature, rather than anthropocentric and instrumentalist methods “in which death literally rain[s] from the skies” (F. Buell, *Apocalypse* 165). In this way, Carson’s *Silent Spring* anticipates the critical dystopian impulse in subsequent decades by infusing fear with hope.

While Carson has been celebrated for spurring the modern environmental movement and introducing “the broad public of her day to the concept of ecology as a new basis for the critique of industrial capitalism” (Foster, *Nature* 512), Ehrlich has often been criticized for representing population dynamics as the sole source of humankind’s socioeconomic and environmental problems, and for advocating population control measures as a silver bullet to these problems. However, I argue that *The Population Bomb* provides a more complex diagnosis of contemporaneous issues by outlining how numerous interrelated socioecological problems threatened to emerge into a dystopian future that Ehrlich hoped to prevent: not only unprecedented human population growth, but also humankind’s increasing dependence on ecologically-polluting chemical pesticides in food production, hyper-consumption in ‘developed’ nations, and socioeconomic inequities between the West and much of the planet. So, while critics often question the “rhetorical usefulness” of Ehrlich’s environmental apocalypticism (Garrard 108) and dismiss his “incurably apocalyptic vision” (Nicholson 433), I argue that his anxieties about the future are grounded in the desire to collectively avoid a dystopian future characterized by widespread ecological collapse, famine, and poverty. Contrary to interpretations of *The Population Bomb* as a work of “failed prognostications” about overpopulation and environmental collapse (Nicholson 433), I argue that Ehrlich consciously adopted the dystopian literary form by

providing his audience with three alternative dystopian scenarios to warn about the potential for environmental and humanitarian crises that might result from overpopulation and overconsumption. Although all three scenarios portray considerable human suffering—they are dystopian, after all—each scenario offers progressively more hope than the last by offering examples of concrete collective strategies that might lay the groundwork for a more ecologically-sane and socioeconomically equitable future. By balancing fear with hopeful alternatives, his text contains the critical dystopian impulse to hold out hope that things could be otherwise.

Chapter Three: Overpopulation Problems?

Just as scientific warnings about the future during the 1960s adopted rhetorical strategies from dystopian fiction, dystopian fiction during the 1960s and early 1970s was influenced by increasingly widespread anxieties about ecological degradation in the 1960s. These concerns were responsible for the confluence of the modern environmental and anti-population growth movements as the 1960s progressed. There is little critical scholarship, however, on overpopulation dystopias, and even less on how dystopian fiction of the period engaged with debates about the causes of ecological degradation that circulated in these related but distinct movements. In the first part of the chapter, I argue that the existing criticism that acknowledges dystopian fiction's preoccupation with overpopulation during this period does not situate these anxieties in the broader, historically specific context of the emergence of the modern environmental movement. Much of the existing criticism on overpopulation dystopias assumes that population issues have always been relevant to the genre as an expression of the inherently contradictory interests of individuals and groups, which often manifest in anxieties about liberty and free expression. Instead, I interpret overpopulation anxieties in the dystopian novels that I

read from this period as responses to contemporaneous socioecological transformations caused by the rapid expansion of global capitalism, consumerism and corporatism, the unprecedented rise in energy consumption and the spectre of energy shortages, the affective and embodied sense of mass urbanization and urban sprawl, widespread pollution, and the disappearance of traditionally natural spaces. In the second part of this chapter, I argue that Harry Harrison's *Make Room! Make Room* (1966), John Brunner's *Stand on Zanzibar* (1968), and Ursula Le Guin's *The Lathe of Heaven* (1971) engage with the discourse of overpopulation not only to express anxieties about population growth and its associated ills, but also to caution against the dangers of Western consumerism and overconsumption, energy waste and extractivism, and anthropocentric and instrumentalist orientations toward non-human nature. While these novels *do* display anxieties regarding overpopulation, they also refrain from blaming contemporaneous social, political, and environmental problems solely on swelling human populations.

Harrison's *Make Room! Make Room!* (1966) depicts stereotypical neo-Malthusian anxieties of the mid-1960s: it presents a future New York City in which overpopulation has led to scarcity, crime, violence, and widespread moral decay. While the novel warns of impending doom if birth rates are not brought into sync with death rates, Harrison's novel—like Ehrlich's *Population Bomb* (1968)—is more than a straightforward neo-Malthusian warning. Unlike neo-Malthusian arguments that suggest human population growth will inevitably lead to social and environmental troubles, Harrison's novel emphasizes that the drivers of socioecological instability in the future decaying New York City are historical, political, economic, and—most importantly—*avoidable*. I argue that novel conveys a nuanced socioecological perspective by foregrounding historical resource mismanagement and overuse by American settlers, poor political planning, and socioeconomic inequality as drivers of the *environmentally instantiated*

social problems that plague the future. The novel shows an awareness of ongoing ecological conversations by situating the plot's central conflicts around water and food scarcity within the context of broader environmental anxieties about resource usage, overconsumption, and the collapse of ecosystems. In other words, Harrison's novel shows that the undesirable future he imagines in *Make Room! Make Room!* was not the inevitable byproduct of human population dynamics, but rather was caused by centuries of unsustainable socioecological and economic relationships between human beings and non-human nature.

Similarly, in *Stand on Zanzibar* (1968), Brunner warns his readers about the interrelated problems caused by consumerism, inequality, ecological degradation, war, genetic manipulation, and human population growth. His documentary style and use of collage in *Stand on Zanzibar* (1968) allow him to draw connections between these problems and show that postwar capitalism has transformed the world into a planetary capitalist ecology. This anticipates Harvey's insistence that despite its destructive effects on ecological systems, "capital *is* a working and evolving ecological system" (Harvey 247). To a greater extent than Harrison, Brunner emphasizes how uneven economic development within the global capitalist system produces socioeconomic inequality *within* and *between* nations. Brunner's emphasis on socioeconomic inequality within a global context counters scarcity-based arguments that claim the world contains insufficient resources to provide for everyone, and instead indicts Western patterns of consumption that reproduce both inequality *and* environmental degradation. In this context, I argue that the novel frames its two main storylines—the American-led neocolonial project to bring capitalist development to the fictional African country of Beninia and the global race to see which nation will be the first to produce a genetically pure national body politic—as misguided attempts to extend status-quo economic relations between the West and the rest of the world. If

the first program is a brash attempt in the lineage of Euro-American colonialism/imperialism to secure access to African resources in the future, then the second (eugenics) is framed as a technological solution to limit population growth and protect existing levels of consumption for a minority of the world's population in the West. Brunner's critique of these programs shows a recognition that the cause(s) of social and environmental problems is not excessive human population growth, but Western consumerism and corporatism and economically and ecologically exploitative neocolonial arrangements. These two programs overlap because they both attempt to resolve a fundamental contradiction between Western standards of living and the habitability of the planet.

Le Guin's *The Lathe of Heaven* (1971) is the final dystopian novel that I close read in this dissertation. Published nearly a quarter century after Orwell's *Nineteen Eighty-Four*, Le Guin's is "the first novel directly concerned with an anthropogenic greenhouse effect" (Trexler 8) and coincides with what critics generally agree is the beginning of dystopian fiction's environmental turn in the early 1970s (Claeys, *DANH* 447; F. Buell, *Apocalypse* 227-228). Like Harrison's and Brunner's novels, Le Guin's *The Lathe of Heaven* depicts a future that is overwhelmed by compounding social, economic, political, and ecological crises. Like these novels, too, hers participates in ongoing environmental and population debates and cautions against dwelling too much on the oversimplifying discourse of overpopulation. Yet, to a greater degree than any of the novels discussed in this dissertation, *The Lathe of Heaven* openly appeals for the need to prioritize a shift in how Western consumer societies think about and interact with non-human nature. In this sense, her novel makes explicit the socioecological concerns that have always been implicit in dystopian fiction's more typically 'Orwellian' themes. I begin my reading of *The Lathe of Heaven* by discussing how it engages with contemporary overpopulation and

environmental discourses related to ecological limits, and how Le Guin rejects the idea that a reduction of the human population will inevitably result in a more safe and ecologically stable planet. The second section focuses on how the novel's multiple dream futures and dialogical structure encourages debate and contending perspective on the future, and how this parallels Ehrlich's presentation of three alternative futures in *The Population Bomb* (1968). While her novel is clearly dystopian, Le Guin's *The Lathe of Heaven* is the only novel in this dissertation that begins to lay the groundwork for what an alternative to the dystopia it imagines might require. This work can be identified in the protagonist George Orr's (whose name is undoubtedly an allusion to George Orwell) principled opposition to Dr. Faber's instrumentalist and anthropocentric use of Orr's dreams to assert total control over the planet. Echoing Adorno, Horkheimer, and Marcuse and anticipating current Marxist ecology and Energy and Environmental Humanities scholars, the novel warns that political, economic, and socioecological problems are interrelated, and cannot be fixed with solutions that are instrumentalist, anthropocentric, and totalitarian. In this context, I argue that Le Guin advocates for an ecocentric understanding of human and non-human nature relations, which is premised upon an avowed anti-anthropocentrism and anti-instrumentalism.

Chapter I

Nuclear Futures

1. Introduction

Over the past two decades, proponents of the Anthropocene concept have argued that humans have become “a decisive influence on the state, dynamics and future of the Earth System” (Waters et al.). The leading group of scientific thinkers behind the proposed new geological epoch, the Anthropocene Working Group (AWG), explain that such a determination “would be defined by the standard means for a unit of the Geological Time Scale, via a Global boundary Stratotype Section and Point (GSSP), colloquially known as a ‘golden spike’” (Waters et al.). As of early 2023, geoscientists have convened in twelve locations across the planet in search for the single site from which to draw “an ideal geologic sample recording these global changes—a golden spike—to mark the end of the Holocene epoch, which began 11,700 years ago, and the beginning of the Anthropocene” (Voosen). While the exact site that will forever represent the birth of this new epoch is still up for debate, members of the AWG agree with near unanimity that the dating of this new epoch “would be optimally placed in the mid-20th century, coinciding with the array of geological proxy signals preserved within recently accumulated strata and resulting from the ‘Great Acceleration’ of population growth, industrialization and globalization” (Waters et al.). According to the AWG, of all the potential signals that indicate the arrival of the age of the *Anthropos*, “the sharpest and most globally synchronous of these signals, that may form a primary marker, is made by the artificial radionuclides spread worldwide by the thermonuclear bomb tests from the early 1950s” (Waters et al.).

The AWG's decision to date the Anthropocene in the mid-twentieth century is a useful jumping-off point for this chapter because it illustrates that the Great Acceleration and the nuclear arms race are products of the same historical moment that signals a shift in how human beings relate to each other and to the non-human world. This historical moment also marks dystopia's coming of age and the dawn of modern environmentalism. These two phenomena are distinct but related critical responses to the socioecological upheavals associated with the Great Acceleration, which has been called "the most anomalous and unrepresentative period in the 200,000-year-long history of relations between our species and the biosphere" (McNeill and Engelke 5). In this chapter, I begin the work of showing how dystopian fiction has been infused with environmental anxieties since the end of World War II and the beginning of what scholars variously refer to as the Anthropocene, the Great Acceleration, the Atomic Age, or the Age of Ecology. These terms will recur in many historical accounts and critical interpretations of the period, as I weave together political, environmental, and literary histories. Although such an abundance of terms may appear confusing, these terms should be thought of less as contradictory periodizations, and more as complementary framing devices for making sense of this anomalous historical moment from different disciplinary vantage points.

In the first part of this chapter, I will show how debates about nuclear weapons and energy shaped collective perceptions of the future in the immediate postwar years. Prominent politicians, scientists, and activists emphasized that nuclear technologies had the potential to fundamentally alter the course of history and shape the trajectory of humankind's future on Earth. Proponents believed that nuclear weapons and energy would be central to a safe and economically prosperous future, while opponents feared nuclear annihilation and warned about the effects of irradiated fallout. Moreover, in the 1950s, mobilization against nuclear testing,

nuclear colonialism, and ecosystem contamination laid important groundwork for the environmental movement of subsequent decades. After providing this historical context, I move on to a brief literature review where I explain how my readings of dystopian fiction from this period will differ from the existing criticism. I then turn to my close readings to argue that George Orwell's *Nineteen Eighty-Four* (1949), Kurt Vonnegut's *Player Piano* (1952), and Ray Bradbury's *Fahrenheit 451* (1953) participate in popular debates about nuclear weapons and energy, and variously reject, accept, query, and take for granted the presence of massively expanded sources of energy that are associated with the Great Acceleration. Each of these texts consider the destructive power of nuclear bombs while demonstrating an awareness about how energy is central to our socioecological, economic, and political futures. While critics have tended to emphasize these novels' typically "Orwellian" political concerns about totalitarianism and conformism, subjectification and surveillance, and mechanization and massification, each of these novels contains its own set of presuppositions about non-human nature, natural resources, and energy that is fundamental to its *socioecological* warnings about the future. Critics have also focused on these novels' critiques of how populations are subjectified, manipulated, and controlled. Marxist ecology's emphasis on the mutual imbrication of 'the social' and 'the ecological' enables a more nuanced reading of how traditionally social and/or political issues like class conflict, wealth distribution, land politics, economic productivity, and resource extraction are better understood as *socioecological*. In considering how energy is integral to this process, I also borrow insights from the Energy Humanities to show how power is wielded by what I am referring to as energy regime *regimes*: regimes that mobilize *energy power* as a means of consolidating and exercising *political power*.

Bracketed by the bombings of Hiroshima and Nagasaki in 1945 and the first

thermonuclear tests in the 1950s, Orwell's *Nineteen Eighty-Four* (1949) is the bellwether of dystopianism's hold on the public's perception of the future in the postwar period. I argue that his novel foregrounds the tension between the potentially liberating forces of scientific progress and machine-based production, on one hand, and the violence of nuclear weapons and colonial extractivism enabled by such technological developments, on the other. Moreover, I argue that Orwell shows how energy is an enabling force for the novel's often remarked upon anxieties about totalitarianism, surveillance, control, and the manipulation of history: energy is wielded as a type of power that regulates interactions between the elites and the masses. The Inner Party can enforce strict controls on human thought and behaviour because of a seemingly endless supply of energy, which is used to surveil, discipline, and punish Oceanian citizens. I argue that the Inner Party is an energy regime *regime* whose political power over its energy-subjects comes from its energy power: the expenditure of energy and control over non-human nature.

While Orwell's novel shows how energy power is integral to the expression of political power, Vonnegut's *Player Piano* critically interrogates how ideas about historical progress in the postwar period were increasingly defined by energy consumption. As with *Nineteen Eighty-Four*, I argue that it is useful to think about the ruling group in *Player Piano* as energy regime *regime*, yet Vonnegut's elite cadre of scientists and engineers *consciously* reflect upon how energy fuels their ability to control the present and guide their vision of the future. The energy regime *regime* portrays itself as the driving force behind a Third Industrial Revolution: an evolution in humankind's productive capacities based on the mechanization and electrification of the entire American economy. In this context, I do not disagree with the preponderance of criticism on the novel that points to mechanization as a defining element of the novel. Instead, I emphasize how Vonnegut does not simply criticize mechanization, but also undermines the

assumption that more energy consumption, as the force that enables the mechanization and electrification of the economy in the novel, equates with progress. Vonnegut achieves this by foregrounding how the energy regime *regime*'s control over this new, mechanized, electrified economy entails monopolizing and policing energy infrastructure and the distribution of land in Ilium. This reproduces segregated living and working spaces, rigid social hierarchies, and alienating relationships among human beings in the novel.

Like Vonnegut's and Orwell's novels, Bradbury's postwar dystopia shows how bad-faith state actors' control over the domestic population is dependent upon a vast and energy-intensive disciplinary apparatus. The themes that scholars frequently emphasize in Bradbury's *Fahrenheit 451*, such as his criticisms of conformity, massification, and consumerism, cannot be isolated from the material energy sources that drive (i.e., *power*) the plot itself. Although it is less clear in *Fahrenheit 451* than in the other two novels which specific group of people we might think of as the energy regime *regime*, the novel instead offers the clearest example of how energy power is used to create energy-subjects. Bradbury's characters' hyperactive and hyper-consumptive lives are lived in the shadow of the bomb. For Bradbury, speed, acceleration, and instant gratification are degenerative features of Western culture, which reproduces mindless, atomized citizens who cannot maintain personal relationships and are estranged from non-human nature. I argue that *Fahrenheit 451*'s breakneck pace is a prescient indictment of the rapid expansion of consumer capitalism during the early days of the Great Acceleration. The narrative's pace conveys Bradbury's fear that mid-century America was barreling towards cultural and ecological catastrophe, which is evident in his choice to conclude the novel with nuclear annihilation.

2. Historical Contexts: The Nuclear Age: Hope, Fear, and the Future of the Planet

Introducing: A Nuclear Future?

World leaders, scientists, and activists spoke presciently about humankind's ability to harness nuclear energy as though it signified a new phase in human history and reconfigured humankind's relationship with non-human nature.⁵ British Prime Minister Winston Churchill "considered the bomb to be 'the second coming, the secret has been wrested from nature . . . Fire was the first discovery, this is the second'" (Churchill qtd. in Welsh 39). This revolutionary capability doubled as "a weapon that would not only revolutionize war," American President Harry Truman wrote, "but could alter the course of history" (Truman qtd. in Wittner 7). Henry Stimson⁶ echoed similar sentiments as these wartime leaders, remarking that humankind's relationship to non-human nature had fundamentally changed in the weeks after the United States dropped nuclear bombs on Japan. On September 11, 1945, he warned President Truman that "the Bomb constituted 'a first step in a new control by man over the forces of nature too revolutionary and dangerous to fit into the old concepts'" (Stimson qtd. in Wittner 30). It is in this context that we can also understand acclaimed environmental historian Donald Worster's declaration that "the Age of Ecology began in the desert outside Alamogordo, New Mexico on July 16, 1945, with a dazzling fireball of light and a swelling mushroom cloud of radioactive gases" (Worster 339).

Debates for and against nuclear weapons and energy, which were often framed in terms of the future, significantly shaped the cultural feeling and general sentiment of the immediate

⁵ While critical readers will bristle at the universalizing language here, as they might when the Anthropocene is mentioned more generally, this is precisely how it was discussed during the period as the quotations attest. There are examples of pushback against such universalizing language and assumptions, most notably how they fail to specify who created and tested these bombs and by whom the negative effects were felt, which I will discuss shortly in the context of nuclear colonialism.

⁶ Henry Stimson was President Roosevelt's Secretary of War and later served as President Truman's Chief Advisor on Atomic Weapons.

postwar years. Brian Ireland explains that the “atomic age” ushered in by these events was characterized “by competing emotions of hope and fear,” as the “apocalyptic potential of splitting the atom” was weighed against its revolutionary promises (Ireland 147). Proponents of nuclear weapons and energy saw these technologies as avenues to a safe and prosperous future powered by clean nuclear energy, while opponents were concerned with securing a future that would be safe *from* nuclear bombs, exposure to harmful radiation, and contaminated ecosystems. Speculation on the effects of nuclear technologies on humankind’s future abounded after the bombings of the Japanese cities Hiroshima and Nagasaki, as politicians and scientists pondered what the future might hold: “political and military planning often shaded into the pseudo-scientific practice of futurology, a collective term for the government-funded committees, think-tanks and research units tasked with assessing the probable course of history” (Hammond 7).

Before I examine in detail the contemporary arguments for and against nuclear weapons and technologies, it is worth briefly noting that the “deadened cultural mood” of “resigned acceptance” to potential nuclear annihilation contributed to the structure of feeling of the late 1940s and early 1950s that was conducive to dystopianism’s emergence as a dominant cultural mode (Walker 512). Despite the ostensible benefits of peaceful atoms and nuclear-powered technologies, life in the shadow of the bomb “was, ‘like a heart condition,’ something that people had to live with” (Winkler qtd. in Walker 512). And, as Gregory Claeys suggests, it was clear “by the mid-1950s we could destroy ourselves completely, and there were good reasons to assume we would” (Claeys, *DANH* 447). In *Cold War Stories: British Dystopian Fiction, 1945–1990* (2017), Andrew Hammond emphasizes that the potential for absolute nuclear annihilation as a secular phenomenon that circulated in the postwar popular imagination underpins much of the dystopian cultural imagination after World War II: “it was nuclear technology that made

dystopianism more prevalent than it had been in the past. [. . .] While global cataclysm had been forecast in the disaster fiction of the late nineteenth and early twentieth centuries, the memory of Nagasaki and Hiroshima and the advent of the thermonuclear age made it a far more immediate worry” (Hammond 9). A close look, then, at the popular debates about the promises and perils of nuclear weapons and energy can provide invaluable historical background on the ideas that were circulating when Orwell, Vonnegut, and Bradbury penned their dystopian classics.

Promises of the Atom: Clean Power and Nuclear Deterrence

Despite the horrors of Hiroshima and Nagasaki, proponents of nuclear technologies were optimistic about entering the Nuclear Age for two main reasons: the promise of abundant clean energy and the possibility of world peace safeguarded by nuclear deterrence. Proponents of nuclear technologies believed that by unlocking the atom’s secrets it would be possible to fulfill “a double set of desires: for technological breakthroughs leading to ever more instant weapons of destruction and to ever easier living” (Engelhart 77 qtd. in Maus 297). Cracking the atomic code, they argued, meant that we could look forward to a future of “cheap power; ‘atomic-energy vitamin tablets’; the mining and smelting of various metals through radioactive beams; and the imminent availability of atomic-powered rockets, airplanes, ships, and automobiles” (Ireland 147-148). Dreams of a stable source of clean energy were widespread in the early postwar years, as the ability to meet growing energy demands was essential to the modernization of economies with growing populations all over the planet. This relationship between energy consumption, population growth, and rising standards of living is a (if not *the*) key factor of the Great Acceleration (McNeill and Engelke 4-5). Nuclear advocates predicted that nuclear energy would provide unparalleled abundance and opportunities for economic expansion, as Chairman of the

United States Atomic Energy Commission (AEC), Lewis Strauss, remarked in a speech to the American National Association of Science Writers:

Our children will enjoy in their homes electrical energy too cheap to meter . . .

Transmutation of the elements, unlimited power, ability to investigate the working of living cells by tracer atoms, the secret of photosynthesis about to be uncovered, these and a host of other results, all in about fifteen short years. It is not too much to expect that our children will know of great periodic famines in the world only as matters of history, . . . and will experience a life span far longer than ours, as disease yields and man comes to understand what causes him to age. (Strauss 9)

For Strauss, American economic development *in the near future* would be guided by nuclear energy's "unlimited power," as people currently alive ("our children") could look forward to "electrical energy too cheap to meter" (Strauss 9). Like President Truman and Prime Minister Churchill, Strauss believed that nuclear technologies signified a fundamentally new relationship between human beings and the natural world. Adopting the future anterior, he speculated that subsequent generations would be able to look back upon the moment in history when the future itself would have changed forever: when nuclear technologies enabled human beings to triumph over hunger, disease, and even mortality.

For proponents, nuclear power's appeal was obvious: it was portrayed as a clean and energy-efficient alternative to existing sources of energy, which would revolutionize economies. As McNeill and Engelke explain, "the power of the bonds within atoms dwarfs that of other energy sources available to humankind. A fistful of uranium can generate more energy than a truckload of coal" (McNeill and Engelke 27). Popular American media did not hesitate to latch onto the hopeful images provided by partisan politicians and scientists. *Newsweek* emphasized

that nuclear energy “could be employed for peaceful applications that would improve the quality of life throughout the world” by appealing to fiction, suggesting that “atomic energy could produce ‘a civilization which would make the comic-strip prophecies of Buck Rogers look obsolete’” (Walker 501). By the mid-1950s, the United States (US), the United Kingdom (UK), and the Soviet Union (USSR) had civilian-run nuclear programs that produced energy for commercial production. In this context, proponents tended to liken nuclear power plants to megadams as powerful symbols of “vigor and modernity” (McNeill 312). Despite growing Cold War animosities in the 1950s, nuclear energy’s current and future promise was one thing that capitalists and communists seemed to agree on: “in both the United States and the Soviet Union, visionaries imagined vast engineering uses for nuclear explosions, such as opening a new Panama Canal or smashing apart menacing hurricanes” (McNeill and Engelke 27).

Proponents of nuclear energy in both the US and the UK speculated that nuclear power would become the backbone of industrial production. In some instances, the anticipation of clean, fast, and safe nuclear energy sounded remarkably like SF, as scientists “lent credibility” to futuristic visions. For example, in 1956, “it had been announced that the second highest priority of the USAF [United States Air Force] was nuclear powered aircraft. In America atomic powered railway trains were considered to be a development of the ‘near future’” (Welsh 51). There was a growing sense in nuclear energy policy circles that nuclear energy would become the *sole source of American electricity*. Fast breeder reactors (FBR), according to the American Economic Association (AEA), *were going to render all forms of non-nuclear energy production obsolete*: “from the late 1950s onwards the AEA’s vision was a totalising one which saw no place for any other form of electricity generation after the mid-1960s. Indeed, for thermal reactors to be economically viable required the end of coal and oil power stations as continued

use would limit the number of nuclear stations built” (Welsh 53). Ian Welsh argues that similar visions prevailed in the UK by the early 1950s when “faith in the development of nuclear power was simply axiomatic . . . throughout the political establishment” (Welsh 41-42). Nuclear-generated electricity was framed as essential to “post-war modernisation of the British economy,” and would enable “the automation of the economy and the introduction of twenty-four-hour working” (Welsh 41-42). As in the US, there was optimism that “‘nuclear boilers’ would revolutionise the generation of electricity and end dependence upon coal and oil” (Welsh 36). By 1956, these nuclear dreams had permeated public discourse in the UK, as Queen Elizabeth II advocated for a nuclear future in a White Paper dedicated to the opening of Calder Hall nuclear power station: “‘our civilisation is based on power’,” she exhorted, and while nuclear power “had ‘proved itself to be a terrifying weapon of destruction,’ [it] could now be harnessed for ‘the common good of our community’” (Queen Elizabeth II qtd. in Welsh 55, 57).

Hope in Nuclear Deterrence

Another promise of nuclear technologies was the idea of nuclear deterrence. Fear of mutually assured destruction (MAD) may not appear to be as immediately relevant as energy politics to the texts that I read in this chapter, yet it is taken up in one form or another in each of the texts I examine. MAD also deserves mention here because of its contribution to the future-oriented cultural debates that shaped these novels. In fact, there is an undeniable “speculative orientation” to MAD and nuclear deterrence (Wallace, *Risk* 4-5), as Molly Wallace has explained that the “discourses of deterrence, the notion of mutually assured destruction (or MAD), required the potential . . . possibility that there would be no future” (Wallace, *Risk* 4). The spectre of MAD would shape both international diplomacy and peoples’ lived experiences all over the

planet throughout the entirety of the Cold War, as this “twisted logic reflected how the people of the world could not bear to live with nuclear weapons, but neither could they bear to part with them” (Rubinson 33). As I explain in the next section, critical responses to the testing of nuclear weapons in the late 1940s and early 1950s played an essential role in mobilizing support for ecological concerns and the founding of the modern environmental movement.

A truncated version of the doctrine of MAD is that, in theory, if multiple superpowers possess nuclear weapons, then all nuclear parties will be deterred from using these weapons for fear of nuclear retaliation. In the context of the Cold War (and arguably a key reason why it remained a *cold* war), Matthew Jones explains that there was a general understanding that “if a general war had broken out between the United States and the Soviet Union during the 1950s, it is almost certain that its central and apocalyptic feature would have been an all-out nuclear offensive” (Jones 719). The use of nuclear weapons, in other words, is a lose-lose situation: *there are no winners in an all-out nuclear confrontation*. This explains why, as Jones suggests, “there were many recorded instances when all three presidents [Truman, Eisenhower, and Kennedy] recoiled in horror from the likely outcome of the general use of nuclear weapons” (Jones 721). In this sense, the promise of nuclear weapons proliferation is that the *presence* of nuclear weapons prevents the *use* of nuclear weapons. Prime Minister Churchill captured this hope by evoking the notion of MAD in an address to the UK Parliament in 1953: “Churchill said he was looking forward to a time when ‘the advance of destructive weapons enables everyone to kill everybody else,’ because then ‘nobody will want to kill anyone at all’” (Churchill qtd. in Ruane).⁷

Demonstrating their faith in nuclear weapons, the UK and the US bolstered their nuclear arsenals in the 1940s and early 1950s, despite considerable anxiety inside and outside of their

⁷ Taken from <https://winstonchurchill.org/publications/finest-hour/finest-hour-186/cold-war-churchill/>. Professor Ruane cites the original House of Commons debates archive: *HCD*, Vol. 520, columns 28–31, 3 November 1953.

political establishments about the long-term viability of MAD as a safeguard to world peace. While he was initially horrified by the images of the American nuclear bombings of Japan, British Prime Minister Clement Attlee was clearly in favour nuclear deterrence as his administration would embark on a massive nuclear weapons development program during his time in office (1945-1951).⁸ His administration did not intend to be left behind in the nuclear arms race when “it became clear that Washington, despite earlier assurances, planned to maintain a U.S. nuclear monopoly, [and] pressures mounted within the British government to build Britain’s own nuclear weapons” (Wittner 37). By 1952, the UK would test its first nuclear weapon over Australia’s Monte Bello islands (Wittner 37). In the US, nuclear scientists working at the AEC were among the most outspoken anti-nuclear weapons advocates, and they unanimously opposed the construction of thermonuclear bombs in the lead up to the infamous Castle Bravo test in the Marshall Islands in 1954. However, President Truman rebuffed their concerns, requested dissenters’ resignations, and moved ahead with the project (Wittner 32). The program moved ahead so quickly and so vigorously that, “within a few years, the U.S. nuclear construction program absorbed approximately one-tenth the electricity produced in the United States” (Wittner 33). Proponents of nuclear technologies had utopian dreams of clean and abundant “electrical energy too cheap to meter,” yet nuclear weapons quickly became a drain on public resources (Strauss 9). Moreover, the fallout from nuclear testing (literally and figuratively) catalyzed the public’s energies *against* nuclear technologies. It was “the public

⁸ Prime Minister Attlee wrote to President Truman in September 1945 of the need for a paradigm shift in political sovereignty that reflected the changing nature of humankind’s capacity for destruction. He warned that “‘if mankind [*sic*] continues to make the atomic bomb without changing the political relationships of States, sooner or later these bombs will be used for mutual annihilation” (Attlee qtd. in Wittner 37).

response to the disastrous thermonuclear weapons test under the code name ‘Castle Bravo’,” John Bellamy Foster argues, that sparked off “the Age of Ecology” (Foster, *Nature* 502).

Opponents of the Bomb: Nuclear Fears and Building Global Movements

Many of the fears, anxieties, and insights at the core of modern environmentalism are present in anti-nuclearism during the 1940s and 1950s. By making this comparison, I am drawing attention to the shared socioecological dimensions of these distinct but overlapping movements. Anti-nuclear and modern environmental anxieties are both products of postwar ecological science and popular fears about humankind’s future on the planet. In fact, as Libby Robin, Sverker Sörlin, and Paul Warde explain, it was during this period “in the 1940s and 1950s [that] the idea of ‘the environment,’ and the crisis about its future, emerged together” (Robin, Sörlin, and Warde 6-7). Ursula Heise explains that in response to these growing fears throughout the 1940s and 1950s, and

from its beginnings in the 1960s, one of the founding impulses of the modern environmentalist movement was its attempt to drive home to scientists, politicians, and the population at large the urgency of developing a holistic understanding of ecological connectedness, as well as of the risks that have emerged from human manipulations of such connected systems. (Heise 22)

As I will show, anti-nuclear activists and scientists lobbied governments and spread awareness about the fragility of the earth’s ecosystems and the interconnectedness of the earth’s nations throughout the 1940s and 1950s. Environmental historian Donald Worster argues that if the detonation of the first nuclear bomb marked the beginning of the “Age of Ecology,” then it was

the pervasive sense of vulnerability to nuclear contamination from nuclear testing in the late 1940s and early 1950s that signaled

the beginnings of widespread, popular ecological concern around the globe. [. . .] The devastation of Bikini atoll, the poisoning of the atmosphere with strontium-90, and the threat of irreversible genetic damage struck the public consciousness with an impact that dust storms and predator deaths could never have had. Here was no local problem or easily ignored issue; it was a question of the elemental survival of living things, man included, everywhere in the world. (Worster 340)

In this context, the “popular ecological concern around the globe” that resulted from the recognition that nuclear contamination threatened “the elemental survival of living things, man included, everywhere in the world” laid important groundwork for the emergence of modern environmentalism in the 1960s (Worster 340). Although the connections between anti-nuclearism and modern environmentalism might not be news to Environmental Humanities scholars, these connections are essential to how I frame Orwell’s *Nineteen Eighty-Four*, Vonnegut’s *Player Piano*, and Bradbury’s *Fahrenheit 451* as texts that are engaged with contemporary socioecological debates about nuclear weapons, energy, human/non-human nature relations, and humankind’s future on the planet in the postwar period. This work requires moving beyond thinking about nuclear weapons as strictly political and/or in the context of Cold War politicking and the nuclear arms race, as is common in dystopian studies. Instead, we might consider how nuclear concerns are inherently socioecological.

Among the most vocal opponents of the production of nuclear weapons, ironically, were prominent scientists and politicians who were instrumental in bringing the bomb into existence. Importantly, and like proponents of nuclear weapons and technology, opponents often framed

their arguments in terms of the future. Despite the growing alliance of science, government, and industry in the postwar period, Wittner argues that “World War II accelerated the politicization of the scientific community, for it not only demonstrated the interlocking nature of science and politics, but pulled scientists into nuclear fission research and, thus, into a growing debate over the Bomb” (Wittner 10). Famed Manhattan Project physicists J. Robert Oppenheimer and Leo Szilard drew the frequent ire of government officials for their frank opposition to nuclear armament and proliferation. Often considered the ‘father of the atomic bomb,’ Oppenheimer notably declared nuclear weapons “not only a great peril, but a great hope” (Oppenheimer qtd. in Rubinson 33). For Oppenheimer, however, the utopian potential of nuclear technology evaporated with the detonation of the bombs in Hiroshima and Nagasaki in August 1945, as only months later he “accompanied Undersecretary of State Dean Acheson to the White House and remarked that some atomic scientists felt they had blood on their hands” (Wittner 30). Szilard frequently antagonized both British and American government officials by warning that the promise of a future made safe by nuclear weapons would never be delivered, and instead he speculated that “atomic bombs would ‘precipitate a race in the production of these devices between the United States and Russia’” (Szilard qtd. in Wittner 4). Szilard was right. The race between the Americans and Soviets to build the hydrogen bomb would lead to the nuclear tests that contaminated *the entire planet* with irradiated fallout, creating the most geologically definitive evidence for the start of the Anthropocene. McNeill and Engelke explain that “everyone alive in the 1950s and early 1960s, even those living in remote Tasmania or Tierra del Fuego, keeps a signature of the Cold War atomic weapons programs in their teeth and bones” (McNeill and Engelke 166). The terrible irony of nuclear weapons is that the more weapons that were produced to keep people safe, the greater evidence of harm to people and ecosystems.

According to Elizabeth DeLoughrey, the study of the microscopic effects of nuclear testing fallout was essential to the increased importance of ecology in the postwar period. It was not until the atomic bomb and its effects on local biomes became the centre of heated political debates, “engage[d] with a ‘big science’ like physics,” that ecology could shed its reputation as a “‘soft’ science consisting of ‘butterfly chasers’” (DeLoughrey 168). In this sense, the “interlocking nature of science and politics” was not only clear to the physicists who helped build the bombs, but to scientists more broadly who questioned the safety of nuclear testing and the truthfulness behind the idea of so-called peaceful atoms (Wittner 10).

Opponents of nuclear weapons within the broader scientific community expressed fears about the future for two distinct but fundamentally related reasons. It was not only that, “for the first time, humanity held the power to destroy its ecosystem in an instant,” but also that nuclear testing in the late 1940s and 1950s scattered the planet with irradiated fallout, which “perfectly symbolised a new type of environmental danger symptomatic of the post-1945 era. It presented an invisible, deadly and artificial threat to all kinds of biota, and appeared capable of altering the fabric of life on a genetic level. Fears arose of total destruction and complete contamination” (Wills 51). While one need not be especially concerned with the environment to fear instant nuclear annihilation, the slower and more pervasive sense of “complete contamination” *did* resonate with ecological thinkers (Wills 51). Many of the most influential figures in the emerging environmental movement had begun to organize and speak out publicly against nuclear weapons testing by the early-to-mid 1950s, including such notable people as Rachel Carson and Barry Commoner.⁹ Both Carson and Commoner expressed concerns that the public was exposed

⁹ According to the Rachel Carson Council, “Carson’s views on nuclear weapons and testing were directly shaped as early as the first two atomic bomb tests conducted by the United States after the destruction of Hiroshima and Nagasaki” (<https://rachelcarsoncouncil.org/rachel-carson-nuclear-war/>). Gary Haq and Alistair Paul claim that she was “among the first to link the dangers of the atomic bomb to the misuse of pesticides, emphasising humanity’s

to deadly chemicals. As I will show in detail in Chapter Two, Carson would “[use] the public’s knowledge of atomic fallout as a reference point” to warn Americans about indiscriminate pesticide spraying that could (and did) circulate carcinogenic materials in the atmosphere and cause ecosystems to collapse (Lear XV). Carson linked the false promise of “the so-called ‘peaceful’ uses of the atom” with widespread ecological contamination: “‘environmental contamination by radioactive materials,’ she observed, ‘is apparently an inevitable part of the atomic age. It is an accompaniment of the so-called ‘peaceful’ uses of the atom as well as of the testing of weapons’” (Carson qtd. in Foster, *Nature* 510). Commoner was also outspoken about the links between nuclear contamination and negative socioecological impacts, and he has remarked that his opposition to the AEC in the 1950s “‘made me an environmentalist’” (Commoner qtd. in Foster, *Nature* 505). He has since criticized the AEC for ignoring widely known ecological facts “that were outside their limited field of vision” in the process of building nuclear weapons. He criticized the AEC for having “at its command an army of highly skilled scientists . . . [who] knew how to design and build nuclear bombs, yet somehow it escaped their notice that rainfall washes suspended material out of the air, or that children drink milk and concentrate iodine in their growing thyroids” (Commoner and Hall). By the 1960s, the links between nuclear and environmental activism were well-established, as groups like the Don’t Make a Wave Committee (now Greenpeace) dedicated themselves to “the two great issues of the time—survival of our environment and peace of the world” (Haq and Paul 12).

capacity to destroy nature and itself” (Haq and Paul 3). Commoner was a leading figure in the anti-nuclear testing movement in the US, which won major victories in the late 1950s, including a temporary moratorium on atomic weapons testing (Wittner 56-57).

Mundialization and Nuclear-Affected Peoples

In the immediate postwar years, activists, scientists, and politicians sought new social arrangements and forms of global cooperation to help police the bomb because they feared that it could not be contained by the traditional nation-state model. The desire for new social arrangements and forms of global cooperation are concrete attempts to imagine a new social order that is predicated on both the shared perception of risk and the hope to safeguard the future. James Warburg, former US government advisor, expressed these widespread feelings when he appealed to the moral obligation that the present owed to the future “[to] take a moral stand and [not] let unborn children pay for our mistakes” (Warburg qtd. in Rubinson 52). Concerns about nuclear weapons increased the popularity of World Federalist movements in the 1940s and 1950s, which eschewed traditional notions of national sovereignty and citizenship in favour of global governance and a sense of planetary belonging. By figuratively shrinking the planet and exposing human beings’ shared vulnerability (which, of course, was shared unevenly), the bomb seemed to usher in a new collective sense of what it meant to be human, which anticipated the effect that the striking images of Earth from space had for environmentalists in the early 1970s.

In the immediate years following World War II there was widespread opposition to the bomb across the globe in response to the fear that states could now cause instantaneous mass death in previously unimaginable ways.¹⁰ This new reality catalyzed existing support for pacifism and world government, and as Rubinson claims, “advocates of world government believed that atomic weapons strengthened their case for unifying the nations of the world under a single government, with the understanding that the A-bomb had made war so awful that only a world government could guarantee peace through a system of international control” (Rubinson

¹⁰ Polling shows that opposition to the bomb was nearly unanimous across the world (see Wittner 15-25).

22). Wendell Willkie's *One World* (1943), for example, drew support from some of the world's most influential antiwar figures, including Bertrand Russell, Mahatma Gandhi, and Albert Einstein (Wittner 18). A young American soldier named Gary Davis captured the world's attention in 1948 with a symbolic gesture that would mobilize support for world federalism and world citizenship when he moved to Paris, renounced his American citizenship, and declared himself a world citizen (Wittner 18). He proclaimed that it

was time to "secede from the old and declare the new," . . . pitched his pup tent on a small strip of United Nations territory, and proclaimed himself a citizen of the world. . . . Endorsements of Davis and of the world citizenship flowed in from Camus, André Gide, Jean-Paul Sartre, André Breton, and numerous other French intellectuals, many of whom appeared with him at press conferences or other public gatherings. An estimated 15,000 enthusiasts flocked to one of these meetings, at which Davis, wearing his old air corps flight jacket, talked of the need to abolish the "narrow nationalism which has always resulted in war and death." (Wittner 17)

The outpouring of public support for Davis' actions was tremendous, and by 1950, "Davis's world citizens registry, with signers from all over the globe, neared the half-million mark. By mid-1951, some 400 French communities had proclaimed themselves 'mundialized,' or world territory" (Wittner 17-18).

If the bomb represented a global sense of vulnerability and an opportunity for more "mundialized" ways of thinking and cooperating to safeguard the future, then it also demonstrated that the risk and exposure that result from nuclear testing was not distributed evenly. In this sense, the effects of nuclear weapons in this period parallel the ongoing climate emergency, which simultaneously affects everyone on the planet while also exposing the

socioeconomic inequities that make the distribution of these effects profoundly unequal. A prosperous and safe nuclear future in affluent Western nations, which entailed cheap energy and nuclear weapons as deterrence mechanisms, depended on the production of “several ‘sacrifice zones’ in a half dozen countries. The security demands of the moment seemed, to those in power, to justify lethally contaminating chosen areas for millennia into the future” (McNeill and Engelke 165). This relationship between security, economic development, energy, and colonialism is central to *Nineteen Eighty-Four*, as I will discuss in my reading of Orwell’s novel. The global race in the late 1940s and early 1950s to build the first thermonuclear bombs resulted in what DeLoughrey calls “nuclear colonialism,” as colonial powers (especially the US, UK, France) tested new bombs in stolen territories (DeLoughrey 179). Much like the Americans in the Pacific region, the British also took advantage of colonized territory in Australia to test bombs, as did the French in North Africa. During this period, ecologists sought to understand the effects of nuclear fallout not only on the local flora and fauna, but on Indigenous populations who were unfairly and often unknowingly exposed to nuclear fallout. Indigenous Micronesian populations were repeatedly exposed to radiation throughout most of the 1950s and bore the special brunt of this neo-colonial relationship. Ecologists’ findings became a major catalyst for mass anti-nuclear sentiment all over the globe by the mid-1950s, as Worster and Foster have argued (Worster 340; Foster, *Nature* 502). Unfortunately, by this point, nuclear testing in the early 1950s had confirmed fears by early opponents of the bomb, as the homicidal and ecocidal race to build bombs thousands of times more destructive than those dropped on Hiroshima and Nagasaki marked a definitive shift in human history and planetary ecology: “Bravo and the subsequent 2000 or so nuclear tests on this planet, Eileen Welsome observes, ‘split the world into ‘preatomic’ and ‘postatomic’ species.’ Radioactive elements produced by these weapons

were spread through the atmosphere, deposited into water supplies and soils” (DeLoughrey 179). DeLoughrey laments that “while many scholars have explored the rise of ecological thought, few have traced the close relationship between the rise of the Age of Ecology and the Atomic Age” (DeLoughrey 167). In this context, it is less surprising that critics of dystopian fiction have not fully explored how texts from this period, consciously or unconsciously, express environmental anxieties through an engagement with concerns about nuclear weapons and energy.

In addition to the uneven experiences of physical harm caused by nuclear weapons and testing is the social, cultural, and psychological harms that resulted from living in the shadow of the bomb. John Hersey, a photojournalist whose *Hiroshima* first exposed American audiences to the on-the-ground horrors of the nuclear attacks on Japan, referred to survivors of the attacks as *war-affected people*. Hammond argues that we can carefully extend this notion of war-affected people to entire societies during the Cold War “who, in Mary Kaldor’s words, ‘lived with the permanent anxiety of war, and with many of the forms of organization and control that are characteristic of war’. The kind of anxieties that Kaldor has in mind—surveillance, military threat, political oppression—had a profound impact on social and cultural practice” (Kaldor qtd. in Hammond 32). The novels that I read in the remainder of this chapter bear traces of the Nuclear Age: “permanent anxiety,” spoken and unspoken, about potential nuclear annihilation, but also the promise of nuclear energy as a stable, safe, and clean source of socioeconomic development. My readings show that the concerns Hammond notes about “surveillance, military threat, [and] political oppression” (Hammond 32), which are commonly identified by dystopian critics, are enacted by regimes whose political power comes from the control and distribution of energy: they are energy regime *regimes* whose subjects are *energy-subjects*.

3. Critical Contexts: Dystopian Studies and the Environmental and Energy Humanities

Criticism on dystopian novels written in the years immediately following World War II has tended towards analyses of social themes and geopolitical issues like totalitarianism, the Cold War, socialism/communism, surveillance and control, mass cultural and conformism, and mechanization. Although, in recent years, critics, scholars, and readers who are attuned to environmental discourses would likely identify nuclear bombs and energy as inherently *socioecological* concerns, this is not the commonly held position in the existing criticism on novels from this period. I suspect that part of the reason why dystopian criticism has lagged in this respect is because of an implicit assumption that modern environmental anxieties do not emerge until later, in the 1960s and 1970s. This is reiterated by one of the most influential theorists in the field, Gregory Claeys, in his recent and impressive monograph *Dystopia: A Natural History* (2017) when he explains in a brief periodization of the genre's preoccupations since World War II that "the spectre of environmental degeneration, later transmuted into a discourse on climate change, with a potentially catastrophic outcome, emerged in the 1970s" (Claeys, *DANH* 447). In his informative survey of dystopian fiction produced during the Cold War, Hammond similarly assumes the absence of ecological anxieties in dystopian fiction produced during the early postwar years by claiming that the genre's core concerns during this period were *political*: "as an intrinsically political genre, . . . it dramatized the complex effects of the political centralism, militarism, nuclearism, espionage and propaganda used in the ideological contest between socialism and capitalism, a set of features which, taken together, can be considered the thematics of Cold War writing" (Hammond 32-33). For Hammond, these concerns constitute not only "the thematics of Cold War writing," but when "speculating on possible futures, it was this set of features that dystopian authors typically chose to intensify in

order to capture the lived experiences of the period” (Hammond 33). Even more recently, Derek Maus (2020) makes a similar argument by suggesting that dystopian fiction produced during this period remained essentially concerned with “undesirable authoritarian futures,” although “communism and socialism were [now] more regularly indicted than fascism” (Maus 290). Interpretive frameworks like Hammond’s and Maus’s are useful because they have identified culturally and politically salient anxieties during the period. However, as Marxist ecologists, ecocritics, and Environmental and Energy Humanities scholars would point out, “political” concerns are inseparable from the broader socioecological context in which these concerns emerge. The purpose of reading texts within the framework of an ecological history of dystopian fiction is not to displace these types of critical interpretation, but to demonstrate how the themes that are hegemonic in the criticism are always already about the environment. This can show how environmental anxieties, though shifting over time, are at the core of dystopian fiction in one form or another.

Outside of the rough critical consensus that dystopian fiction starts to take on environmental themes in the 1970s, Brian Stableford argues that “ecological issues rudely barged their way into the foreground of futuristic fiction in the 1950s and 1960s, with the result that the political issues central to Orwellian novels were gradually forced out to the margins” (Stableford, “Dystopia” 269-270). Unfortunately, this type of reading reproduces the same problem as above by implying that the “political issues central to Orwellian novels” are separate from ecological issues—ecological issues that *are not present* in “Orwellian novels” (Stableford, “Dystopia” 269-270). This is a problem for two reasons. First, as I argued previously, critics may choose to read for “ecological issues” or not, but this does not change the fact that every piece of literature ever produced bears traces of a particular historical context that was shaped by, among other

things, climate conditions, the predominance of certain energy sources, a particular mode of production, uses of land, territories, and resources, assumptions about humankind's relationship to non-human nature, and so on. In this sense, every text is 'environmental' (or, better yet, socioecological) and it is up to critics, if they so choose, to do the work and make these connections. A closely related problem is the effect produced by categorizing "Orwellian novels," including the original, as 'pre-' or 'non-ecological'. If Orwell's *Nineteen Eighty-Four* is not "ecological," then neither are its apparent imitators. This is a significant problem because, as Keith Booker explains, Orwell's novel casts a long shadow: "*Nineteen Eighty-Four*, published in 1949, set the stage for all future dystopian fiction and went on to become one of the most important cultural texts (science fiction or otherwise) of the Cold War" (Booker, "SF" 173). An engagement with texts from this period as ecological appears to have been seriously limited by the outsized influence of Orwell's novel on the genre and the assumption that it is not 'ecological'. The upshot, however, is that if we can begin to think about the genre's so-called 'Orwellian concerns' as ecological, then the entire category of so-called 'Orwellian novels' becomes ripe for ecocritical analysis.

Lastly, there are readings that focus specifically on the use of nuclear weapons in mid-century dystopian fiction, yet these readings are anti-materialist (or anti-ecological) insofar as they interpret nuclear weapons as symbolic, often masked as "alien invasion and postapocalypse narratives," or as offering the opportunity for cultural/spiritual rejuvenation (Booker, "SF" 171; Stableford "SF" 131). Although "the faith in a specifically scientific resolution of human problems . . . ended at Hiroshima and with Oppenheimer's disgrace" (Fitting, "Modern" 61), hope nonetheless remained that nuclear annihilation could offer "redemption": "that a decisive interruption of technological progress might be a blessing in disguise" (Stableford, "SF" 131).

Booker argues that numerous novels drew on popular fears of nuclear war to critique Western (especially American) culture as degenerative. Discussing texts such as *Earth Abides* (Stewart, 1949), *Limbo* (Wolfe, 1952), *Fahrenheit 451* (Bradbury, 1953), *A Canticle for Leibowitz* (Miller, 1959), *Alas, Babylon* (Frank, 1959), and *Level 7* (Roshwald, 1959), he writes that “a number of post-holocaust works succumb to the temptation to see nuclear war as an almost positive event that interrupts the growth of alienation and routinization in American society” (Booker, *Monsters* 136). Critics seemingly agree that nuclear weapons serve the narrative function of either resolving or exacerbating existing social and political tensions. Such symbolic readings, however interesting or insightful they may be, leave room for analysis that frames nuclear weapons as historically emergent objects with the potential to radically alter the biological, chemical, and geological fabric of the planet. By opting not to treat nuclear weapons as material objects, critics have been unable to recognize the ways in which postwar culture conceived of nuclear weapons and energy as *both* material threats to human safety and as material sources of hope.

Heeding Maus’s recommendation that “critics of dystopian literature who are concerned with the historical development of the genre may benefit from a fresh look at some of the most influential texts written during the early postwar years,” I read *Nineteen Eighty-Four*, *Player Piano*, and *Fahrenheit 451* in the context of the contemporary debates about nuclear weapons, energy, and the habitability of the future that I outlined in part one of this chapter (Maus 287). Each of these texts weigh the promise and peril of nuclear weapons and energy while demonstrating an awareness of energy’s centrality to capitalist narratives of postwar abundance. Although Energy Humanities scholars like Imre Szeman and Dominic Boyer lament that “fuel and electrical dependency is so banal in its omnipresence that it receives strikingly little public attention and commentary,” I will show that each of these novels makes more or less self-

conscious assumptions about how energy relates to the vision(s) of the future that each text conveys (Szeman and Boyer 27). While this type of analysis is relatively new in literary scholarship, it is nonetheless surprising that scholars of utopian and dystopian studies have not asked the perhaps “banal” but nonetheless important questions about energy’s “omnipresence” in these works: what powers the unrelenting surveillance apparatus in *Nineteen Eighty-Four*, the mechanized and electrified economy in *Player Piano*, or the constantly present cars and planes in *Fahrenheit 451*? How and why do each of these novels contain nuclear bombs as looming threats and as narrative devices that move the plot and constrain characters? Where does all of this (nuclear) energy come from?

The ‘political’ phenomena that are typically emphasized in the criticism on mid-century dystopian fiction—totalitarianism and repression, surveillance and domination, mass production and mechanization, conformism and alienation—require tremendous amounts of energy. The emphasis on subjectification in dystopian fiction criticism, including how populations are manipulated, controlled, discursively shaped, and dominated, can benefit from a closer consideration of how energy is integral to this process. Essential to these readings is the Marxist ecologist critical commonplace that neither ecological nor social critique are sufficient in themselves because “the expropriation of nature is at one and the same time the expropriation of land/ecology and the expropriation of human bodies themselves. . . . [T]he robbing of nature . . . is also the robbing of the physical bases of human existence” (Foster and Clark *Robbery* 8). In this context, I emphasize how the source of political power in each of these novels is the domination of non-human nature, including but not limited to, so-called ‘natural resources,’ land, non-human animals, and energy. I pay special attention to how political power is wielded by what I call energy regime *regimes*: regimes that mobilize *energy power* as a means of

consolidating and exercising *political power*. This interpretation of how political power and energy power are related is influenced by Marxist ecologist Andreas Malm's insight that "the English language might contain a basic truth from which scientific research has become estranged[:] . . . the power derived from fossil fuels was dual in meaning and nature from the very start" (Malm, *Fossil* 18-19). It is not simply that energy is present in these novels, but rather that energy is wielded as a *socioecological* weapon by a particular ruling group (energy regime *regimes*) against their (energy) subjects. I argue that this can deepen existing conversations in dystopian criticism that so often focus on social infrastructure, mechanisms of social control, and group dynamics without considering their socioecological dimensions.

4. George Orwell's *Nineteen Eighty-Four* (1949)

A novel whose importance to the genre of dystopian fiction is arguably second to none, Orwell's *Nineteen Eighty-Four* engages with the contemporary debates about nuclear technologies and the uncertain future they foreshadow by weighing the potentially liberating forces of energy-intensive machine-based production against the potential violence of nuclear weapons and colonial extractivism. While the novel is preoccupied with surveillance, control, and discipline within a totalitarian state, as critics have long pointed out, I show that these power dynamics are enabled by energy as a form of socioecological power: the energy regime *regime's* political power is facilitated and intensified by the exploitation, consolidation, and manipulation of non-human nature. The state of perpetual war in the novel is an energy-intensive means for the regime to acquire the materials necessary to control the domestic population, as three global superpowers with a monopoly on nuclear weapons vie for control over land, energy resources, raw materials, and human labour in the non-aligned world. In this context, the party's ability to

turn its citizens into energy-subjects requires constant sources of energy—much of which is stolen through colonial extractivism. The novel interestingly critiques developmentalist notions of historical progress which assume that machine production will necessarily resolve class inequities by raising standards of living. Instead, the novel suggests that efforts to resolve socioeconomic inequities require social and political redistributive mechanisms, which may be aided in this work by technologies like industrial machines. However, at the core of this perhaps socially progressive critique is also an ecologically dangerous and verifiably false assumption that supplies of energy will be (functionally) infinite in the future.

Criticism

The criticism on Orwell's *Nineteen Eighty-Four* often focuses on the novel's anxieties about totalitarianism and the instability of historical truth in the context of Cold War politicking, while also noting how the novel shaped dystopian representations of the future in subsequent decades. In this sense, *Nineteen Eighty-Four* participated—willingly or not—in the Cold War, which “was as much a cultural conflict as a military conflict, one whose ‘full arsenal’ of weapons included literature, cinema, music and art” (Hammond 15). Critics have read *Nineteen Eighty-Four* in this context, at least in part, because Orwell consciously thought about his own writing as engaging in ongoing debates about political economy and social welfare, as he explained in the final months of his life (1903-1950) after the novel's publication in 1949: “every line of serious work that I have written since 1936 has been written, directly or indirectly, against totalitarianism and for democratic Socialism” (Orwell qtd. in Milner 832). However, Orwell was concerned that even the egalitarian aims of socialism might be used as a pretence to consolidate power within an increasingly small minority. As critics like William

Steinhoff have noted, his novel displays an anxiety about “the possibility that a hierarchical version of socialism might easily develop instead of one that was democratic” (Steinhoff 157). While readers might assume that Orwell’s novel was simply an indictment of the perversion of socialism in the USSR, he was also bothered by the feeling “that totalitarian ideas have taken root in the minds of intellectuals everywhere,” which resulted in his choice to set the novel in the UK (Orwell qtd. in Horan 66-67).¹¹

Another critical commonplace is that *Nineteen Eighty-Four* expertly captures the group dynamics at the core of totalitarianism. The focus on totalitarianism cannot, of course, be altogether distinguished from the Cold War historical context. George F. Kennan (US chargé d’affaires in Moscow during the mid-1940s) would remark of totalitarianism in 1953 “that the clearest expression of the phenomenon ‘is neither the Soviet picture nor the Nazi picture . . . but rather the fictional and symbolic images created by such people as Orwell’” (Kennan qtd. in Hammond 15). Claeys has recently dedicated nearly one third of his 600-page tome *Dystopia: A Natural History* (2017) to tracing the lineage of *Nineteen Eighty-Four*, and he argues that “its chief accomplishment . . . is to delineate with breathtaking clarity how some kinds of totalitarian group[s] functioned” (Claeys, *DAH*N 437). For Claeys, Orwell successfully “juxtaposed the rational individual to the mass robotic creature of propagandistic suggestion and enforced imitation,” which allowed him to “reinforc[e] the idea that the mass or crowd was linked with dystopia in a number of ways, and flirted with the romantic individualist . . . postulate that dystopia is the rule of the group over the individual” (Claeys, *DAH*N 494). Other critics have

¹¹ Shortly before his death, Orwell wrote that “my recent novel is NOT intended as an attack on Socialism or on the British Labour Party (of which I am a supporter). . . . I believe . . . that totalitarian ideas have taken root in the minds of intellectuals everywhere, and I have tried to draw these ideas out to their logical consequences. The scene of the book is laid in Britain in order to emphasize that the English-speaking races are not innately better than anyone else and that totalitarianism, if not fought against, could triumph anywhere” (Orwell qtd. in Horan 66-67).

also praised Orwell's ability to dramatize totalitarian group-individual dynamics through his depiction of how Oceania's citizens are isolated, surveilled, disciplined, and punished. James Tyner, for example, has argued that isolation acts as a force for social fragmentation in the novel, as "the corporeal 'cogs' of the Party [are] unaware of others' activities. They [are] partitioned, each sequestered into their own enclosed spaces" (Tyner 136). This fragmentation allows the ruling party to isolate, discipline, and punish individuals, which further contributes to the group's totalitarian control over the mass of individuals. This control is pervasive, as Olsa Pema and Ervin Xhinaku point out, because "in public or in private every word spoken and every deed performed by almost every Oceanic citizen is basically . . . hard-wired" (Pema and Xhinaku 26). However, what these critics have not paid adequate attention to is how these physical manifestations of social power—the technologies, objects, and machines that are used to exert social power through isolation, surveillance, and punishment—rely almost entirely on the expenditure of energy. Rather than dismiss this important thread of criticism, I will build on these insights by showing that we can better understand the power dynamics between the totalitarian group and oppressed individuals in the novel by thinking about these dynamics in a literal sense as *power dynamics*: social relations dependent upon *socioecological* forms of power that are enabled by harnessing the atom, electricity, raw materials, and land as tools of control.

Atomic Weapons, Perpetual War, and Energy

Class conflict and the mechanisms through which class power is consolidated in the novel are central themes in the criticism on *Nineteen Eighty-Four*, yet the extent to which political power relies upon energy power has been overlooked. *Power*, Malm argues, has an interesting dual meaning in the English language as both "a force of nature, a current of energy, a measure

of work” and as “a relation between humans, an authority, a structure of domination” (Malm, *Fossil* 17-18). One of the primary ways that power takes on this double meaning in the novel is in the context of perpetual war, which Orwell reveals to be a class-based accumulation strategy that requires constant sources of energy and is enabled by the existence of nuclear monopolies. Orwell actively participated in postwar public debates about nuclear weapons and energy that I outlined in this first part of this chapter. Only two months after the bombings of Hiroshima and Nagasaki, he wrote an essay titled “You and the Atom Bomb”. In this essay, he speculates on the role that harnessing the power of the atom might have in reconfiguring geopolitical relationships, such as the role this new energy power might play in altering the balance of political power in the postwar period. If nuclear weapons were easier to produce, “the distinction between great states and small states would have been wiped out, and the power of the State over the individual would have been greatly weakened” (Orwell, “Atom Bomb”). However, since this was not the case, he proposed that “ages in which the dominant weapon is expensive or difficult to make will tend to be ages of despotism” (Orwell, “Atom Bomb”). Here, Orwell explicitly links energy power, political power, and the potential for totalitarianism. Harnessing nuclear energy into atomic weapons, he warns, could exacerbate existing power dynamics between nations and promote “the kind of world-view, the kind of beliefs, and the social structure that would probably prevail in a state which was at once unconquerable and in a permanent state of ‘cold war’ with its neighbours. . . . ‘[A] peace that is no peace’” (Orwell “Atom Bomb”).

In *Nineteen Eighty-Four*, Orwell shows that perpetual war requires tremendous amounts of energy and functions as a control mechanism in two related ways: conflict wastes the resources that might otherwise be used productively to diminish class inequities, while perpetual war justifies an ongoing state of exception whereby the Inner Party exercises absolute control over

the citizens of Oceania. These control mechanisms depend on the nuclear bomb, and the proliferation of these weapons has led to a superpower stalemate where “none of the three super-states could be definitively conquered even by the other two in combination”; the true “war is waged by each ruling group against its own subjects” (Orwell 194, 207). This stalemate echoes his earlier comments from the 1945 essay that nuclear weapons would produce “unconquerable” states in “permanent” conflict (Orwell “Atom Bomb”). Only the threat of MAD prevents large-scale nuclear war in the novel, as the three superpowers wage perpetual, low-intensity wars in which access to human labour and natural resources are frequently won, lost, and exchanged. In Orwell’s imagined future, the world is split into four zones: Oceania (UK/Americas), Eurasia (Europe, Russia), Eastasia (China and its sphere of influence), and a non-aligned region spanning most of Africa, the subcontinent of India, and the Middle East. The novel, of course, is set in 1984, and the reader is informed that the protagonist Winston Smith was born in either 1944 or 1945. The novel presciently refers to the late 1940s and 1950s as a period of rapid transition that would dramatically change the trajectory of the world in the years between 1949-1984, which anticipates both the AWG’s dating of the Anthropocene and environmental historians coining of the term the Great Acceleration. It is during the fictional early 1950s that Winston becomes orphaned, and the narrator suggests that the final ‘break’ with the past occurs after a series of nuclear attacks on the UK: “Winston could not definitely remember a time when his country had not been at war, but it was evident that there had been a fairly long interval of peace during his childhood, because one of his early memories was of an air raid which appeared to take everyone by surprise. Perhaps it was the time when the atomic bomb had fallen on Colchester” (Orwell 34-35). By 1984, however, perpetual war is the new normal for citizens of Oceania and the other major regional blocs, as the narrator estimates that twenty to thirty rockets fall on London within

a given week (Orwell 28). During a foray into the Prole district—a part of London that is inhabited by proletarian, non-party members—Winston meets an elderly man who he probes for information about the pre-war times, yet “It’s all wars,’ said the old man vaguely” (Orwell 92).

The Inner Party uses war as a pretence to monopolize energy and produce conditions of deprivation among most citizens in Oceania. Not only does war and weapons manufacturing (building and testing) require tremendous amounts of energy and capital,¹² but using energy and capital in this way is an accumulation strategy: the Inner Party hoards and wastes energy and capital that could otherwise be used to improve social infrastructure and the living conditions of the population. The first of the Inner Party’s three slogans is “War is Peace,” which is supposed to mean that war abroad provides the conditions for peace at home. However, this ‘peace’ does not create peace even at home, since war has become “a purely internal affair. . . . The war is waged by each ruling group against its own subjects, and the object of the war is not to make or prevent conquests of territory, but to keep the structure of society intact” (Orwell 207-208). The Inner Party’s monopoly and superfluous waste of energy conditions the inhabitants of Oceania because, as the narrator explains, perpetual war meant “a continuous shortage of consumption goods, and the occasional crash of a rocket bomb which may cause a few scores of deaths” (Orwell 194). In this sense, Goldstein’s treatise explains, the war is “merely an imposture” designed to “ea[t] up the surplus of consumable goods, and . . . to preserve the special mental atmosphere that a hierarchical society needs” (Orwell 207). The suffering and shortages experienced by the subjects of Oceania are intentionally orchestrated to preserve class distinction and power.

¹² For another example of Orwell’s prescience, recall Wittner’s observation that, by 1952, “the U.S. nuclear construction program absorbed approximately one-tenth the electricity produced in the United States (Wittner 33).

Energy and Subjectification

While critics have tended to focus on the Inner Party's use of disciplinary mechanisms to enforce compliance among the masses, I argue that the energy regime *regime's* political power and Oceania's class hierarchy depend upon their ability to control access to and consumption of energy, which allows them to utilize energy-intensive disciplinary mechanisms. Statistics provided by the Ministry of Truth (an ironic name for the regime's propaganda department) claim that life expectancy, crop yields, literacy rates, and much more are all improving: stats "pour[ed] out of the telescreen. As compared with last year there was more food, more clothes, more houses, more furniture, more cooking-pots, more fuel, more ships, more helicopters, more books, more babies [. . .]. Year by year and minute by minute, everybody and everything was whizzing rapidly upwards" (Orwell 62). Here, progress is linked to an increase in energy consumption ("more fuel"), yet Winston knows these figures to be untrue in his "own bones," as his lived experience of deprivation is at odds with the energy-intensive "ideal set up by the Party [that] was something huge, terrible and glittering—a world of steel and concrete of monstrous machines and terrifying weapons" (Orwell 76, 77). Although energy and machines could be used to provide Oceanians with essentials, such as food, clothes, and housing, they do not. Winston's personal experiences of deprivation, which I will discuss in detail shortly, are juxtaposed with the regime's superfluous use of energy for disciplinary mechanisms. The novel opens during the run-up to Hate Week, a week-long event during which the party whips the public into a murderous frenzy, and the narrator remarks that the energy and resources this requires have turned Winston's already austere living conditions even more so. Energy shortages and power blackouts are a common occurrence, the opening passage explains, as the elevator in Winston's apartment building was not working because "the electric current was cut off during daylight

hours. It was part of the economy drive in preparation for Hate Week” (Orwell 3). The energy shortages, it is important to note, do not affect the instruments of total surveillance that are ubiquitous in private and public spaces, such as two-way telescreens, cameras, microphones, and even helicopters. For example, the narrator remarks that “how often, or on what system, the Thought Police plugged in on any individual wire was guesswork. It was even conceivable that they watched everybody all the time” (Orwell 4). In addition to the more subtle forms of surveillance, the energy regime *regime*’s “police patrol” uses energy-intensive helicopters for “snooping into people’s windows” (Orwell 4). The use of energy-intensive and costly machines like helicopters for mundane tasks such as “patrol” and “snooping” implies that a tremendous amount of energy is available at the regime’s disposal. Although energy appears “banal in its omnipresence,” the energy regime *regime*’s unrelenting surveillance and disciplinary apparatus nonetheless requires stable and secure sources of energy to function (Szeman and Boyer 27).

Class distinctions in *Nineteen Eighty-Four* are largely represented in terms of access to energy, which is a precondition for the energy regime *regime*’s application of energy as a subjectifying mechanism (i.e., how the energy regime *regime* creates energy-subjects). The novel rejects a view of history that assumes socioeconomic progress develops linearly, which contradicts hopeful mid-century representations of the future as powered by abundant sources of nuclear energy. Instead, the novel presents a future in which there has been little progress in living conditions over the past half century as most people live in “old flats, built in 1930 or thereabouts” that are “falling to pieces” and in which “the heating system was usually running at half steam when it was not closed down altogether from motives of economy” (Orwell 22-23). The classed element of energy deprivation is most clearly articulated in domestic spaces in the novel, such as when Winston is invited to O’Brien’s home to discuss the Brotherhood. As Tyner

notes, this passage “demonstrates a particular intersection of class, space, privilege and discipline,” and significantly, the *power dynamic* between Winston and O’Brien is emphasized through references to energy and consumption. For most Oceanians, life is defined by scarcity, since “there had never been quite enough to eat, one had never had socks or underclothes that were not full of holes, furniture had always been battered and rickety, rooms underheated, tube trains crowded, houses falling to pieces, . . . nothing cheap and plentiful except synthetic gin” (Orwell 62). At O’Brien’s home, however, Winston finds imported wines rather than oily gin, manufactured rather than hand-rolled cigarettes, pantries full of food rather than stale bread and cafeteria slop, telescreens that can be manually operated rather than 24-hour surveillance cameras, and functioning mechanical elevators rather than crumbling staircases (Orwell 175). Whereas Winston finds himself with regularly shrinking rations and living under blackout conditions driven by “motives of economy,” O’Brien’s life as a member of the Inner Party is defined by access: to energy, to food, to imported and manufactured commodities, to comfort, and to security (Orwell 23).

If, as I have argued so far, the Inner Party monopolizes energy-power as an energy regime *regime*, then it maintains Oceania’s hierarchical structure by employing energy power to create a class of politically subservient energy-subjects. Steinhoff draws on Hannah Arendt’s theorization of totalitarianism to suggest that the party’s goal is to eradicate the historical record and the notion of objective truth by creating ‘ideal subjects’: “the ideal subject of totalitarian rule is not the convinced Nazi or the convinced Communist, but people for whom the distinction between fact and fiction . . . no longer exist[s]” (Arendt qtd. in Steinhoff 150). Subjectification is achieved in the novel through technologies of *power* (in Malm’s double-sense of the word) that isolate, observe, and condition the behaviour of Oceanians, which is aimed at “not only complete

obedience to the will of the State, but complete uniformity of opinion on all subjects” (Orwell 214). The relationship between energy power and political power is evident in the power dynamic between Winston and O’Brien: their relationship is mediated by energy power. Power dynamics between Winston and O’Brien result in the former’s eventual capitulation to Big Brother, which is framed as a cure to Winston’s ‘mental problems’—he is made into an ‘ideal subject’. As a member of the Inner Party, O’Brien is in a position of authority (power) over Winston, and this is emphasized in O’Brien’s privileged access to and control of energy. In addition to how energy consumption is a key difference in their standards of living, it is O’Brien’s ability to turn off the telescreen when they meet at his home that amazes Winston. “Winston was too much taken aback to be able to hold his tongue,” the narrator explains, as he incredulously says to O’Brien: “You can turn it off!” (Orwell 176). Reiterating the significance of this privilege, Winston repeats on the following page: “That thing is really turned off?” (Orwell 177). O’Brien’s ability to turn off the screen(s) is a striking example of how social and political power in the novel depends on the physical control of energy power, which Winston of course lacks. The metaphorical idea of their relationship as a power dynamic is subsequently materialized when O’Brien begins the process of ‘curing’ Winston by subjecting him to electrical current. The narrator’s graphic description emphasizes how O’Brien’s control of energy enables him to metaphorically and literally reshape Winston: an “electrically produced” effect “wrenched” his body “out of shape, the joints were being slowly torn apart,” as O’Brien reminds him that he has the power to change him completely: “Will you please remember, throughout our conversation, that *I have it in my power to inflict pain on you at any moment and to whatever degree I choose*. . . . Do you understand that?” (Orwell 257, emphasis added). The “power” he possesses, in Malm’s useful formulation, is dual: “a force of nature, a current of

energy” and “a relation between humans, an authority, a structure of domination” (Malm, *Fossil* 17-18). During this session when O’Brien exerts this dual power over Winston, he explains that he will fix him because he is “mentally deranged. You suffer from a defective memory” (Orwell 258). To *cure* Winston is to render him an ideal (energy) subject. To make him not only *say* but *believe* that $2 + 2 = 5$, as recurs in the novel, requires a tremendous amount of *power*.

Energy, Extractivism, Colonialism

So far, my reading of *Nineteen Eighty-Four* has largely considered atomic weapons and energy power in relation to Oceania’s hierarchical domestic social structure, but it is also productive to examine how these internal affairs are enabled by resource extraction and energy colonialism. The novel makes clear that the energy regime *regime*’s domestic control is facilitated by colonial and extractivist relationships with regions of the world that are not aligned with any of the three superpowers. In so doing, it consciously acknowledges the ongoing history of colonialism and imperialism and its relationship to energy, which includes what DeLoughrey refers to as nuclear colonialism. We can find evidence for these claims in Winston and Julia’s conversations at the apartment above Mr. Charrington’s antique shop, which is also where they study Goldstein’s treatise. As Winston and Julia prepare to read, she arrives with luxury items that are not typically available to normal Oceanians. Informing him that she has brought real jam, coffee, butter, and tea, Julia remarks that they must have “captured India, or something” (Orwell 147). The *energy* that they receive from this food, which is of course emphasized because of their relative deprivation throughout the rest of the novel, is paralleled by the energy, resources, and labour that is extracted from the non-aligned world—here, “India, or something”

(Orwell 147). This passage where they enjoy the fruits of colonial plunder foreshadows what they will learn about how and why the three imperial superstates fight over ‘disputed territories’.

The novel depicts imperialism as a socioecological relationship by emphasizing how the energy regime *regime*’s political and energy power depends on both the expropriation of natural resources and exploitation of human labour. Marxist ecologists understand the expropriation of non-human nature and the exploitation of labour to be part of the same process. Foster explains that primitive accumulation “has a double-effect: it pushes subsistence workers off of the land and into labour markets . . . while opening up new fields for extraction” (Foster, *ME* 170). The link between land (to which we can add other means of subsistence like water, minerals, animals, and so on) and labour is the defining feature of Oceanian’s extractive relationship to the non-aligned world. The goods that Julia procures for herself and Winston in the passage mentioned above are agricultural products that embody the value produced by the joint efforts of non-human nature and human labour. In one of the key passages that describes the world’s overarching imperialist structure, the reader is told that the theft of natural resources and the exploitation of human labour are indispensable and inseparable sources of the energy regime *regime*’s power. Beyond the boundaries of the three superstates, the disputed lands

contain valuable minerals, and some of them yield important vegetable products such as rubber[.] . . . But above all they contain a bottomless reserve of cheap labour. . . . The inhabitants of these areas, reduced more or less openly to the status of slaves, pass continually from conqueror to conqueror, and are expended like so much coal or oil in the race to turn out more armaments, to capture more territory, to control more labour power.

(Orwell 195)

Here, labour is the key element (“but above all”), yet the passage frames labour as a type of energy source by comparing exploited (slave) labour to “so much coal or oil in the race to turn out more armaments, to capture more territory, to control more labour power” (Orwell 195). The term *extractivism*, in this context, applies to the process of exploiting both raw materials *and* human beings, as both are reduced to an exploited ‘nature’ from which the colonial power can extract profit. The ability to “capture” territory, extract resources, and “control” labour are part of an exploitative dialectic: *more* land brings *more* labour brings *more* energy, *more* energy brings *more* land brings *more* labour, and so on seemingly indefinitely. This dialectic of theft *powers* the Inner Party’s imperial war machine much like the domestic dialectic of political power and energy power buttresses Oceania’s internal class structure. This link between colonial extractivism and domestic oppression pervades the novel, as is neatly captured in a young child’s threat to Winston: “I’ll send you to the salt mines!” (Orwell 25).

Machines: False Utopia?

By showing how the Inner Party uses energy, labour, and natural resources to uphold hierarchical class structures, the novel critiques the idea that energy-intensive machine production will inevitably upend class hierarchies. Yet, in the process of articulating this position, the novel also makes problematic assumptions about the availability of abundant energy in the future. By portraying a future when industrial and scientific advancements have produced endless wars and sophisticated forms of repression, rather than equality, safety, and affluence, the novel raises questions about industrial machine production in ways that intersect with contemporaneous debates about scientific developments in nuclear weapons and energy. While it is necessary to proceed with caution when aligning Orwell’s personal beliefs with any specific

view of a mechanized future portrayed in *Nineteen Eighty-Four*, he was openly skeptical of the unwavering faith that conflated scientific and industrial advancements with social progress. He warned that, in Nazi Germany, “the order, the planning, the State encouragement of science, the steel, the concrete, the aeroplanes, are all there, but all in the service of ideas appropriate to the Stone Age” (Orwell qtd. in Horan 57). He also believed that industrial, mechanized society produced gross consumerism, and that its massifying effects “ma[d]e a fully human life impossible” by “atrophying of the physical senses” (Orwell qtd. in Claeys, “Industrialism” 224). Despite these anxieties, he also understood that there was no turning back the clock, and so his “lament for a world passing away was thus mixed with resignation” because he realized that “the machine had to be accepted . . . rather as one accepts a drug—that is, grudgingly and suspiciously. Like a drug, the machine is useful, dangerous and habit-forming” (Orwell qtd. in Claeys, *DANH* 396).

Though the novel emphasizes that industrial machine production *alone* will not inevitably result in a more equitable future, it does appear to hold out hope that under the correct political conditions the productivity of machines will “by a sort of automatic process” redistribute wealth in progressive and beneficial ways (Orwell 197). From an environmental perspective, the text problematically assumes that only political issues—such as the equitable distribution and use of resources—require hashing out, thereby taking for granted that non-human nature can be safely treated as an endlessly abundant extraction site for human ends, so long as these ends are socialistic. In other words, the novel does seem to uncritically accept that there *are* limitless sources of energy that *could* power an equitable future, if only issues related to redistribution of wealth and capitalism’s wastefulness could be resolved. This point is made in no uncertain terms in Goldstein’s treatise’s explanation that the world’s resources are *so abundant that those in*

power must waste them through war to maintain class hierarchies. In the treatise, the world that never fully recovered from “the ravages of the atomic war of the nineteen-fifties” is juxtaposed with a more hopeful alternative which hinges upon the liberatory potential of the machine: “as early as the beginning of the twentieth century, human equality had become technically possible” (Orwell 77, 197, 212).

At the core of the historical analysis in Goldstein’s treatise is faith in the productive capacities of industrial society, which the treatise explains has been made possible by scientific developments in machine production. Echoing mid-century arguments about the promise of unlimited energy and the future it would enable, the treatise explains that waste was necessary to quell popular expectations about the future because, by the “early twentieth century, the vision of a future society unbelievably rich, leisured, orderly and efficient—a glittering antiseptic world of glass and steel and snow-white concrete—was part of the consciousness of nearly every literate person” (Orwell 196). However, rather than bring about a future without “hunger, overwork, dirt, illiteracy and disease,” machine production has been used as a mechanism to consolidate power among the elites in an ongoing war between “the High, the Middle and the Low,” whose “aims” are “entirely irreconcilable” (Orwell 197, 192). This was necessary because, as the treatise explains, it was clear to the ruling class that “an all-round increase in wealth threatened the destruction—indeed, in some sense was the destruction—of a hierarchical society” (Orwell 197). The High (i.e., the Inner Party or who I have referred to as the energy regime *regime*) must intentionally waste the fruits of industrial society, largely through perpetual wars, to limit the spread of machine production’s benefits which occur “by a sort of automatic process—by producing wealth which it was sometimes impossible not to distribute” (Orwell 197). So, although “science and technology were developing at a prodigious speed, and it seemed natural

to assume that they would go on developing,” what halted the seemingly inexorable march towards a “rich, leisured, orderly and efficient” society was poor political planning and repressive social relations: “partly because of the impoverishment caused by a long series of wars and revolutions, partly because scientific and technical progress depended on the empirical habit of thought, which could not survive in a strictly regimented society” (Orwell 196, 195-196). In advancing this argument, the treatise takes for granted that scientific and economic development *could* allow for endless growth, *if only under proper political conditions*—in a peaceful, free, and open society. From a socioecological perspective, however, the problem is that there is no acknowledgement of the potential natural limits to the amount of energy, resources, or land that can be mobilized by industrial mechanization towards even the most egalitarian ends. In effect, the treatise takes a historical view of economic development that suggests modes of production advance inevitably towards greater equality, yet this also presumes the availability of constantly increasing sources of energy. While the novel *does* complicate the idea that machines will produce socioeconomic equality irrespective of political conditions, there nevertheless remains the problematic faith that there will always be cheap and abundant energy to power these machines until humans finally get the politics right.

Although I am inclined to think that we should avoid criticizing past authors or books for failing to understand, in the 1940s, that trying to achieve endless economic growth on a finite planet would be ecocidal, it is still important to recognize that the text appears to assume that energy will always be cheap and abundant. From our current vantage point, we can see that both potential futures—the dystopian hellscape Orwell describes in the novel and the potential utopian alternative that the novel implies might be possible if machine production were used for socially progressive ends—take for granted that ecological limits will not significantly constrain the

future. So, when Goldstein's treatise laments that in the mid-twentieth century "the earthly paradise had been discredited at exactly the moment when it became realisable," we can now recognize that it likely *was not* realizable, or not for everyone (Orwell 212). Amitav Ghosh makes this point somewhat more eloquently when he explains that "the patterns of life that modernity engenders can only be practised by a small minority of the world's population" (Ghosh 92). These modern patterns of life, largely though not exclusively in the West, are enabled by disproportionate and unsustainable access to cheap energy and its products. Orwell's novel falls short of recognizing this problem, which is evident in the highly suspect suggestion that if 'we' could distribute resources and energy better then there would be "a world in which everyone worked short hours, had enough to eat, lived in a house with a bathroom and a refrigerator, and possessed a motor-car or even an aeroplane" (Orwell 197). While the first four of these goals are hardly objectionable from an environmental perspective, a future in which everyone has their own "motor-car or even an aeroplane" presupposes an energy-intensive relationship between human beings and non-human nature that the current climate crisis reveals to be both homicidal *and ecocidal*. Importantly, in the second half of the twentieth-century, anti-capitalist and socialist ecologists like Murray Bookchin, Andre Gorz, Joel Kovel, Val Plumwood, Paul Burkett, Malm, and Foster have moved away from this relatively simple formulation that a desirable future can be summarized as *basically capitalism, but with better redistribution*. Indeed, the recognition that an egalitarian and habitable future requires *socioecological* solutions—that there cannot be long-term socioeconomic equity without ecological sanity—is precisely why eco-socialism and environmental justice have become such popular conceptual frameworks for working through the climate emergency. The extent to which *Nineteen Eighty-Four* assumes that such an energy intensive relationship between human

societies and non-human nature is possible, let alone desirable, betrays an outdated energy unconscious: a world of endless natural reserves for human consumption.

5. Kurt Vonnegut's *Player Piano* (1952)

Unlike Orwell's *Nineteen Eighty-Four*, the dystopian future in *Player Piano* is not characterized by scarcity or deprivation, but instead by excess: abundant energy, hyper-efficiency, and mass production. Yet, like Oceania in *Nineteen Eighty-Four*, Vonnegut's America is a hierarchical society where power resides with what I have referred to as an energy regime *regime*. In the first half of this reading, I argue that the energy regime *regime* in *Player Piano* consciously reflects upon *energy* as the source of their power: the ruling ideology among the scientific and managerial elite openly associates ballooning rates of energy consumption and the increased productivity this enables with historical progress. This allows them to establish a mechanized and electrified New Economy that consumes tremendous amounts of energy. Vonnegut, in this context, demonstrates an awareness that energy should be understood "as the fulcrum around which many of [the] most pressing social, economic, and political issues must be analyzed and understood" (Wilson, Carlson, Szeman 4). In the second part of this reading, I explore how Vonnegut adopts a rhetorical position that concedes to proponents of technoscientific development that peace and economic prosperity are possible in a highly centralized and mechanized society. Yet, he does this to flesh out the novel's central problem: the widespread belief "that the condition of man improves in direct ratio to the energy and devices for using energy put at his disposal" (Vonnegut 300). In this sense, Vonnegut's *Player Piano* participates in contemporary debates about the promises and perils of nuclear weapons and energy by critically interrogating the assumption that a safe and prosperous future can be

uncritically defined in terms of energy production and consumption. I argue that the novel's emphasis on dehumanization and alienation that results from mechanization—often the focus of criticism on the novel—can be better understood if we think about these anxieties as part of Vonnegut's broader critique of the faith-based assumption that energy consumption, economic development, and technological innovation are sufficient conditions for a desirable future. Here, I will borrow from the Energy Humanities, Marxist ecology, and Theodor Adorno and Max Horkheimer to argue that Vonnegut's novel shows that this narrowly defined type of progress requires not only tremendous amounts of energy, but also “creative destruction” (Schumpeter qtd. in Harvey 98), the expropriation of land, the exploitation of labour, and an instrumentalist ideology that reduces human beings and non-human nature to fungible, measurable, and replaceable inputs in the production process.

Criticism

Most criticism on Vonnegut's novel has tended to home in on the social tension caused by the dystopian effects of machine production. In the process, these readings treat Vonnegut's *Player Piano* as if it were almost entirely a critique of “the damage wrought by progressive mechanization,” or a slightly more nuanced “nostalgia for a less technological society rather than for a non-technological society” (Claeys, *DANH* 454; Segal, “Player Piano” 174). The primary “damage” caused by mechanization, critics emphasize, is the loss of some innately ‘human’ quality. For Howard Segal, Vonnegut's Iliumites lose “personal identity and social purpose,” despite living in a future America where mechanization has delivered “the material benefits of technology” (Segal, “Player Piano” 163). The loss of personal identity results from the broader socioeconomic system which “is, in a sense, itself a giant automated machine, with millions of

parts” (Segal, “Player Piano” 163). While many critics agree that the effects of mechanization on the human psyche is singularly important in the novel, Leonard Mustazza carries this impulse furthest in his comparison of the novel to Aldous Huxley’s *Brave New World* (1932). According to Mustazza, Vonnegut’s “Americans are neither drugged nor thought-controlled; they’re simply bored. As a dystopian science fiction, *Player Piano* extrapolates just one element: the challenge to be human when all socially structured rewards for such existence have been removed” (Mustazza 99). Unfortunately, readings of the novel that are grounded in an abstract ‘human-ness’ and ill-defined ‘humanism’ lead critics to universalizing and ahistorical claims about ‘human nature’ and ‘what it means to be human’. Mustazza boldly if not surprisingly concludes that “ultimately technology and the political oppression and social inequities that can result from it are not the point of *Player Piano* at all” (Mustazza 109). Instead, he argues that “machines have not imprisoned the people of Ilium; their own humanity has . . . In short, the author’s point—a subtle and sophisticated, if pessimistic, point—is that human dynamics create discontent by their own nature” (Mustazza 109). Vonnegut *was* concerned with mechanization and *did* have anxieties about how this affected human beings. Yet, by reducing these anxieties to the degradation of an essential ‘human quality,’ these interpretations minimize the extent to which Vonnegut’s concerns about how mechanization would affect human beings were specifically responsive to postwar consumer capitalism and its rapidly rising energy demands.

In contrast, Booker has offered a more historically nuanced reading of the novel by acknowledging its ambivalence about mechanization and technological advancements in the context of the postwar years. He explains that Vonnegut “does not denounce science and technology themselves as unequivocal evils,” but rather warns that “technological development and the concomitant bureaucratic management have simply gotten out of control” (Booker,

Monsters 44). For Vonnegut, according to Booker, the main problem is that “industry and technology have themselves become a sort of substitute religion; the citizens of his projected dystopia worship above all else industrial efficiency and productivity” (Booker, *Monsters* 44). In this context, Booker elsewhere makes a compelling case that Vonnegut’s text anticipates developments in “consumer capitalism” by recognizing that “modern technology has made production so efficient that humans are more and more becoming necessary not as workers who produce goods, but as consumers who buy them” (Booker, *Impulse* 101). While Booker’s reading of the novel usefully draws these connections, it does not consider how this productive and efficient consumer-dystopia is powered by material sources of energy and shaped by the forms of socioecological control that are enabled by centralized mechanization. In contrast to these readings, I argue that the novel also responds to mid-century debates about nuclear technologies and about the promise of abundant energy that shaped popular conceptions of the future. By reading the novel within the context of these postwar debates, I show that we learn more about the novel’s socioecological concerns if, instead of approaching the question of mechanization’s alienating effects head on, we look more deeply at what fuels them.

Part One: The New Economy

One of the main concerns in *Player Piano* is the increasing influence of science and technology in shaping visions of the future; and, like Orwell’s, Vonnegut’s novel acknowledges the centrality of energy to those visions. Welsh explains that during the immediate postwar years, “for the first time[,] science ha[d] been elevated to a position of centrality in the process of government and governance” (Welsh 49). In Vonnegut’s novel, the “engineers, managers, and scientists” have effectively replaced the American political establishment, forming what I refer

to as an energy regime *regime*, and exacerbate this existing trend in science and technology's growing political influence by establishing a centralized, expanded, and energy-intensive machine-based economy (Vonnegut 6). Vonnegut emphasizes this shift on the novel's second page when the narrator explains that, in the future, elected officials in the US are mainly figureheads who take a backseat to the scientists and engineers that control the New Economy. Doctor George Proteus, the protagonist's father, "was at the time of his death the nation's first National Industrial, Commercial, Communications, Foodstuffs, and Resources Director, a position approached in importance only by the presidency of the United States" (Vonnegut 2). In fact, traditional politicians are entirely absent from the novel, apart from a few passages that emphasize their *lack* of importance: "[President] Lynn . . . hadn't even finished high school . . . because all the gorgeous dummy had to do was read whatever was handed to him on state occasions" (Vonnegut 119-120).

Like *Nineteen Eighty-Four*, *Player Piano* is not simply anti-science or anti-machine. However, whereas Orwell was concerned with how energy and machine production could be used to reinforce rather than dismantle social hierarchies, Vonnegut is more concerned with problematizing the blind faith in technology as social panacea. This faith in science underpins what are called technofixes: "short-term, avowedly practical proposed solutions to hitherto unsolvable social, economic, and social problems. . . . They reflect an almost blind faith in the power of technology as panacea" (Segal, "Techno-Fix" 231). Welsh argues that this faith increasingly prevailed in the American and British political establishments in the immediate postwar years, and the optimistic sense was that "science would provide a rational means of resolving all social and political problems. . . . Without the guidance of science it was argued that 'democracy would not survive'" (Welsh 43-44). As I have argued throughout this chapter,

nuclear technologies were largely framed in these terms: as weapons and sources of energy that could prevent the onset of a third global conflict and create enough energy to free humankind from issues related to scarcity and/or underdevelopment. Unlike in *Nineteen Eighty-Four* (and *Fahrenheit 451*), the nuclear bomb does not loom as a constant threat in *Player Piano*, yet Vonnegut nevertheless strategically wades into the debate about whether nuclear technologies are a great hope or a great peril by suggesting that American military supremacy and technical “know-how” have enabled a future “when there is no more war” (Vonnegut 1, “Foreword”). The narrator states that this “was the miracle that won the war—production with almost no manpower. In the patois of the north side of the river, it was the know-how that won the war. Democracy owed its life to know-how” (Vonnegut 1). Although the passage refers to machine production (“production with almost no manpower”) and “know-how,” it becomes clear in the novel that “the know-how that won the war” is a euphemism for mass industrialization and the sophisticated “war-born EPICAC,” a massive and energy-intensive computer that was used to weigh “the merits of high-explosive bombs as opposed to atomic weapons for tactical support,” and allowed the “the great tradition of the American rifleman” to be replaced with weapons like “radio-guided rocket[s] with an atomic warhead” (Vonnegut 117, 255). It is important to remember that, according to proponents of nuclear deterrence, *nuclear bombs are ideally never to be used*: their purpose is to *prevent* conflict. In this context, nuclear bombs are not absent in the novel; rather, they are foundational to the geopolitical situation that allowed the future US to become a post-conflict, energy-intensive, and mechanized dystopia. These peaceable conditions allow the novel to explore what I argue is its central question: if “the condition of man improves in direct ratio to the energy and devices for using energy put at his disposal” (Vonnegut 300).

In Vonnegut's future America, the energy regime *regime* is the driving force behind the New Economy, which the regime considers to be an evolution in human history. Unlike in *Nineteen Eighty-Four*, where the energy regime *regime*'s ability to use energy power as a mechanism of social control depends on an unstated assumption about the availability of cheap and abundant sources of energy, the energy regime *regime* in *Player Piano* consciously emphasizes the "constructive story" of energy's "superlative" ability to improve the conditions of human beings (MacDonald 13). In this sense, Vonnegut shows an awareness of how "the story of human development has been the story of the increased use of energy" (Jamieson qtd. in Wilson et. al 4-5). In *Player Piano*, nearly all forms of labour have become mechanized, and representatives of the energy regime *regime* champion this transition as liberatory for "rais[ing] the standard of living of the average man immensely" by "eliminating human error through machinery" (Vonnegut 21). The energy regime *regime*'s Eastern Division manager and chief evangelist, Kroner, solemnly reminds Paul that "our job is to open new doors at the head of the procession of civilization. That's what the engineer, the manager does. There is no higher calling" (Vonnegut 128). Kroner implies that their work in mechanizing the economy is part of the same socially progressive historical trajectory as liberating enslaved people in the US. He explains that "if you convert the horsepower of one of the bigger steel-mill motors into terms of manpower, you'll find that the motor does more work than the entire slave population of the United States at the time of the Civil War could do—and do it twenty-four hours a day" (Vonnegut 52). Here, freedom is tied to energy through the implication that slavery would have been unnecessary had the "motor" existed. The tenor of the passage, however, suggests that for the energy regime *regime* the real improvement is not measured in human dignity, but instead in joules—more energy, *more reliable*, and "twenty-four hours a day" (Vonnegut 54).

Vonnegut was aware that the increased capacity to produce commodities through mechanization required a tremendous expansion in energy consumption, which the energy regime *regime* in the novel equates with a progressive step in human history: the Third Industrial Revolution. This revolution furthers the processes of industrialization that rely *increasingly less* on workers and *increasingly more* on ‘intelligent’ machines. This idea first emerges early in the novel during a conversation between Paul and his secretary, Katherine Finch, and underlines an important relationship in the novel between the transition to electrical energy in industrial development, the massive expansion of energy consumption, and the resultant obsolescence of human labour. Paul explains that industrial, Fordist production has begun to give way to “thinking machines. That would be the third revolution, I guess—machines that devalue human thinking. Some of the big computers like EPICAC do that” (Vonnegut 15). Vonnegut’s suggestion of a Third Industrial Revolution that devalues “first the muscle work, then the routine work, [and] then, maybe, the real brainwork” indicates his awareness that, as proponents of nuclear energy openly remarked, increased consumption of electricity would play an essential role in all aspects of the future economy (Vonnegut 15). This discussion early in the novel primes the reader for the introduction of EPICAC—an acronym that puns on the medicine *ippecac* that is used to induce vomiting—which is later described as “an electronic computing machine—a brain, if you like” (Vonnegut 115). This mass, centralized “electronic computing machine,” which is at the heart of the New Economy and Third Industrial Revolution, consumes more electricity than the entire state of New York (Vonnegut 115).

Critics of the novel have tended to focus on the negative effects of mechanization on human labour without considering how mid-century narratives about increased access to energy underpins this entire process, and for this reason, EPICAC is largely undiscussed in criticism on

the novel beyond references to its prescient anticipation of the information economy. This “electronic computing machine[’s]” dependence upon a huge and stable amount of energy is discussed in key points in the novel, such as in a conversation between Edgar J. Halyard (the energy regime *regime*’s liaison to foreign dignitaries) and the visiting Shah of Bratpuhr. Halyard provides the Shah a tour of Ilium throughout the novel, which is an example of the visitor trope in utopian and dystopian fiction that educates the reader about the imagined society through interactions between the ‘insider’ and the ‘outsider.’ Interestingly, when Halyard takes the Shah to tour the EPICAC facilities at Carlsbad Caverns, the reader learns about how EPICAC’s centralized and massive computational power helped win the war and plan for new postwar economy. Referring to the ‘chamber’ of EPICAC that they are touring, Halyard explains that “this chamber alone, the smallest of the thirty-one used, contains enough wire to reach from here to the moon four times. There are more vacuum tubes in the entire instrument than there were vacuum tubes in the State of New York before World War II” (Vonnegut 115). The machine’s extraordinary computational power, which it owes to its extraordinary number of electric wires and vacuum tubes, helped the Americans win the war because EPICAC was able to process tremendous amounts of information and provide concrete recommendations on a broad range of issues, including “the spacing of enemy foxholes, the labor situation in the respective processing industries, the probable mortality of planes in the face of enemy antiaircraft technology, and on and on” (Vonnegut 117). Comparing the present to “the bad old days” that relied upon fallible human decision-making, Halyard remarks that EPICAC gave new meaning to “the ancient phrase used by generals testifying before appropriation committees, ‘all things considered’” (Vonnegut 116, 117). EPICAC not only provided tactical military support, but also demonstrated an ability to anticipate human demand: “if it seemed at all important, to [determine] the number

of cigarettes and Coconut Mound Bars and Silver Stars required to support a high-morale air force” (Vonnegut 117). As Halyard explains, it is EPICAC’s ability to transition from a war-time instrument to one more suited to consumer needs that has made it so valuable. Progress, both militarily and in terms of the New (postwar) Economy, can be measured by EPICAC’s increasingly sophisticated decision-making capacities, which can be measured by the amount of energy it consumes: “Through the war, and through the postwar years to the present, EPICAC’s nervous system had been extended outward through Carlsbad Caverns—*intelligence bought by the foot and pound and kilowatt*” (Vonnegut 118, emphasis added).

The idea that historical progress can be measured by energy consumption—“by the foot and pound and kilowatt”—is most explicitly portrayed as party orthodoxy in the extended passage at the Meadows Retreat where “the most promising men” gather for a week “in an orgy of morale building” (Vonnegut 39). There they are indoctrinated into the energy regime *regime*’s faith that energy consumption, including the increased production and consumption of consumer goods enabled by abundant energy, *is the best metric of socioeconomic development*. The retreat includes a play in which a young radical and a young engineer debate the merits of America’s economic system before a judge. The engineer makes his case by imploring the only witness who takes the stand, John Averageman, to reflect upon the unique historical moment in which he lives. The engineer explains to Averageman that he lives in the culminating period of centuries of socioeconomic progress, and that he owes his quality of life, security, and freedom to the productivity of the New Economy. He implores Averageman to consider his television set, laundry machine, clothes, pension, medical insurance, and half-a-dozen other modern conveniences, all of which, as the aptonym Averageman suggests, are possessed by average Americans. These modern conveniences, as the young engineer is aware, require tremendous

amounts of energy. In fact, it is the average person's energy consumption that signifies their high quality of life, as the engineer implores that "the point I was trying to make was that John . . . has become far richer than the wildest dreams of Caesar or Napoleon or Henry VIII! Or any emperor in history! . . . *But, not with all his gold and armies could Charlemagne have gotten one single electric lamp or vacuum tube!*" (Vonnegut 218, emphasis added). Even the average subject of the energy regime *regime*, he explains, has "become rich beyond the wildest dreams of the past" because of their unfettered access to electrical energy (Vonnegut 218). "Civilization has reached the dizzyest heights of all time," the engineer proclaims, as he rattles off numerous statistics related to the US's energy consumption: "Seventy-seven per cent of all the world's automobiles! Ninety-eight per cent of its helicopters! Eighty-one point nine per cent of its refrigerators! [. . .] Seventy-one point three per cent of the world's generating capacity! Eighty-five per cent of its industrial control vacuum tubes! Sixty-nine per cent of its fractional horsepower motors!" (Vonnegut 218). According to the energy regime *regime's* philosophy, civilization *can* be measured by the capacity to produce and consume energy-intensive goods. Importantly, it is axiomatic for the regime that an increase in these consumer capacities equates with genuine socioeconomic progress. As I will show, however, the novel critiques this misguided faith: Vonnegut's anxieties about mechanization, alienation, and labour are a direct response to this misguided philosophy that assumes an abundance of cheap energy would allow 'civilization' (whomever this signifies) to reach "the dizzyest heights of all time" (Vonnegut 218).

Part II: Complications with the New Economy

In comparison to *Nineteen Eighty-Four*, where energy is used to maintain an oppressive status quo of class hierarchy and perpetual war, the energy regime *regime* in *Player Piano* hardly

seems dystopian, as they use energy to power ‘thinking machines’ that create historically unrivalled levels of consumption. However, Vonnegut undermines this vision of a consumer utopia by warning about the alienating and even potentially coercive nature of a system that is so singularly fixated on reducing all elements of the economy to inputs (such as energy) and outputs (such as commodities). While the energy regime *regime* espouses a linear narrative of progress that depends upon an ever-increasing access to and consumption of energy, the novel challenges this narrative by foregrounding how the party’s tremendous energy requires a monopoly on energy, the theft and policing of land, and the segregation of the population along classed lines.

Ilium, Segregated

Like Orwell’s novel, Vonnegut’s novel shows how the energy regime *regime*’s political power depends on its ability to police and control the distribution of energy and land. As I discussed in my reading of *Nineteen Eighty-Four*, Marxist ecologists have shown that capital accumulation is a *socioecological* process that requires expropriation of both labour and land. As Carrie Freshour eloquently puts it, ongoing capitalist accumulation works “through an unequal valuation of people and places” that “simultaneously robs the worker and the soil” (Freshour 33).¹³ The criticism on the novel, however, has not considered the relationships between future America’s energy needs, the social alienation that results from mechanization, and the control of land, which is somewhat surprising given that roughly the first fifty pages of the novel deal almost entirely with the historical and socioecological conditions that have led to contemporary Ilium, New York. While critics have discussed Vonnegut’s representation of social alienation that results from mechanization, they have overlooked the fact that this ‘social’ issue is just one

¹³ Freshour makes this argument in relation to poultry-processing plants in the US, which she argues exploits workers of colour as people at the intersection of labour, race, and ecological degradation in America.

part of the larger *socioecological* situation that the novel explores. The regime, in this context, produces a *physical* and *social* infrastructure that reproduces the types of social alienation in the novel that critics have identified. The novel's opening paragraph explains how Ilium's socioeconomic order is mapped onto its physical landscape: "Ilium, New York, is divided into three parts. In the northwest are the managers and engineers and civil servants and a few professional people; in the northeast are the machines; and in the south, across the Iroquois River, is the area known locally as Homestead, where almost all of the people live" (Vonnegut 1). The novel, in this sense, begins by describing how the regime maintains its power through tight controls over the distribution of capital, labour, and land, which importantly entails the separation of the (formerly) working classes of Ilium from the means of production.

The displacement of labour from the means of production was a state-driven accumulation strategy that required the control of land and occurred during the future-history of the novel, which is literally mapped onto Ilium's physical geography when the novel begins. In Ilium, land and physical infrastructure like bridges are used to separate the masses from the material and symbolic sources of power: the machines, factories, and power plants. The importance of energy power to the energy regime *regime's* political power is further emphasized early in the novel when the reader learns that the Ilium Works, like other power plants in Ilium, is not only separated from the formerly labouring masses by a bridge, but it is also heavily fortified with electrical fencing. Once again, this information is provided as part of the novel's prehistory, as it is implied that the fortification of power plants in Ilium is a result of postwar conflicts between the regime and labour: "ten years after the war—after the men and women had come home, after the riots had been put down, after thousands had been jailed under the antisabotage laws— Doctor Paul Proteus was petting a cat in his office" (Vonnegut 1). Taken together, the bridge and

the heavily fortified security convey that the energy regime *regime* has intentionally separated the masses of (formerly) working people from the means of production, which has produced the desired effect of limiting peoples' mobility and segregating the elites from the masses: "if the bridge across the Iroquois were dynamited, few daily routines would be disturbed. Not many people on either side have reasons other than curiosity for crossing" (Vonnegut 1).

The energy regime *regime*'s reliance on energy power and the control of land is indicated not only by its partitioning of physical space to separate the formerly working class from the power plants, but also by the fact that new energy infrastructure has literally and symbolically replaced infrastructure related to arts, culture, and history. The displacement of arts, culture, and history infrastructure in *Player Piano* echoes the Inner Party's erasure of the historical record in *Nineteen Eighty-Four*, but in Vonnegut's novel this erasure results specifically to meet the New Economy's energy requirements and is an example of what anti-capitalist economists refer to as "creative destruction": "New technological configurations displace the old and in so doing initiate phases of what the economist Joseph Schumpeter famously dubbed 'gales of creative destruction'. Whole ways of life and modes of being and thinking have to drastically alter to embrace the new at the expense of the old" (Harvey 98). This insight can help us ground Claeys's argument that Vonnegut's novel is primarily about "the damage wrought by progressive mechanization from the standpoint of humanism" in the context of the massive changes in energy production that were occurring during the early years of the Great Acceleration (Claeys, *DAH*N 454). For example, the narrator explains that buildings in the region with symbolic connections to the arts and humanities have been demolished to make way for energy production facilities: the Social Sciences Building at Union College "had been torn down to make space for the new Heat and Power Laboratory" and the Ilium Historical Society Building "had been torn

down to make room for the new Ilium Atomic Reactor” (Vonnegut 293). Following Harvey, we can ask “who gains from the creation and who bears the brunt of the destruction?” (Harvey 98). In Ilium, the energy regime *regime* benefits because this is part of a broader strategy of accumulation needed to meet the energy demands that are at the core of their philosophy of historical development. One of the clearest examples of this accumulation strategy is provided early in the novel by the narrator when it is explained that *all of the country’s energy production* was “placed under the National Manufacturing Council” after the war (Vonnegut 39).

In addition to its real and symbolic displacement by machines, human labour is reduced to a mere input of energy in the New Economy. As a result, human labour is rendered obsolete, which produces the kinds of social and interpersonal alienation that pervade the novel. In another example of the regime’s conflation of historical progress with increased productivity and its promotion of the creative destruction that accompanies endless growth, Paul is tasked by the energy regime *regime*’s top brass with tearing down Thomas Edison’s old shop. Instead, “he’d talked Headquarters out of it,” and the building is retrofitted to meet the new demands of the power plant. The old workshop, now Building 58, is described as “a pet of his,” which is a bad omen given that Paul is informed only a few pages after this description of Building 58 that the cat he is petting in the novel’s opening scene is electrocuted by Ilium Works’ electrically fortified gates. The building’s presence *initially* offers Paul respite in the novel as he begins to question party orthodoxy: “it took the edge off Paul’s periods of depression. It was a vote of confidence from the past, he thought—where the past admitted how humble and shoddy it had been, where one could look from the old to the new and see that mankind really had come a long way” (Vonnegut 6). Despite this initial “vote of confidence from the past,” the building comes to represent a sort of memorial for those displaced by the mechanization process, which is central to

Paul's conversion away from party orthodoxy. The building bears the traces of the machines' former operators, whose essence has been distilled and separated from them (i.e., alienated) in a double sense. First, the building, "which was now filled with welding machines and a bank of insulation braiders," contains the etched initials of its former operators who have been removed from the production process: "KTM," "DG," "GP," "BDH," "HB," "NNS" (Vonnegut 7). The proximity of the machines and these traces of their former operators in Building 58 contrasts with the New Economy's current distribution of capital and land—described only a few pages prior—whereby the masses of the population are separated from the machines by infrastructure like bridges. Second and related, these machines that now operate semi-autonomously can do so because the labourers' movements have been programmed into their processes: Rudy Hertz "had been chosen to have his motions immortalized on tape" (Vonnegut 10). As the narrator describes it, "by switching in lathes on a master panel and feeding them signals from the tape, Paul could make the *essence of Rudy Hertz* produce one, ten, a hundred, or a thousand of the shafts" (Vonnegut 11). Here, human labour is alienated into the machine by distilling the essence of Rudy Hertz—a man whose name is an aptonym that evokes energy and electrical power. Put differently, to the energy regime *regime*, Hertz' essence *is power*, and along with that of his co-workers, this power has been replaced to fit the needs of the new energy-intensive economy, much as the buildings in Ilium have given way to atomic reactors and energy laboratories as real and symbolic examples of creative destruction. Uncoincidentally, it is Hertz that Paul runs into at a pub in the Homestead. It is at this pub where the novel's prevailing image—a player piano—is evoked, as it plays in the corner while Paul realizes that this is the man, Hertz, whose movements have been "immortalized on tape" (Vonnegut 10). Rudy remarks to Paul that it "makes you feel kind of creepy, don't it, Doctor, watching them keys go up and down? You can almost see a

ghost sitting there playing his heart out” (Vonnegut 32). Paul, seemingly aware of the irony in Hertz’s observation, “twisted free and hurried out to his car” (Vonnegut 32).

Social Infrastructure and Alienation

By emphasizing the centrality of energy to the New Economy and showing how production and distribution of energy requires material transformations of land and infrastructure, Vonnegut shows that the causes of social alienation in the novel are *socioecological*. In other words, the social unease the novel depicts is not simply a result of mechanization and its negative effects on human beings; instead, mechanization in the novel requires the cooptation of land and energy in ways that simultaneously transforms the material world and systematically replaces, excludes, segregates, and alienates human beings (and not only members of the working class). Adorno and Horkheimer’s understanding of how material and social structures of power mutually reinforce each other will help me show how economic processes related to energy, land, and mechanization reinforce and are reinforced by the socially repressive structures represented in the novel. One clear example is how the energy regime *regime* reduces human beings to fungible and measurable inputs, much like energy sources, through processes of standardized testing and restrictive controls over personal mobility.

I propose that Vonnegut’s critique of the negative social effects of mechanization on human beings is part of a broader criticism of instrumentalism that applies technoscientific rationality to non-human nature (such as land and so-called ‘resources’) as well as to human beings. His critique of mechanization, from this perspective, is *socioecological* as it considers how the domination of non-human nature is tied up with control over human beings. In *Dialectic of Enlightenment* (1947), Adorno and Horkheimer lament that in the context of “the ends of

bourgeois economy . . . what men want to learn from nature is how to use it in order wholly to dominate it and other men. That is the only aim” (Adorno and Horkheimer 4). This process of dominating non-human nature, Adorno and Horkheimer repeatedly emphasize, is always and ultimately self-defeating: “there is a reckoning for this form of thinking that considers itself secure in the various departments of science,” as “world domination over nature turns against the thinking subject himself” (Adorno and Horkheimer 26). The energy regime *regime*’s economic productivity and the concentration of wealth enabled by the domination of non-human nature “allows the technical apparatus and the social groups which administer it a disproportionate superiority to the rest of the population” (Adorno and Horkheimer XIV-XV). The technical apparatus and logic of domination that undergirds the energy regime *regime*’s monopolization of energy production and the distribution of land is applied to the population at large, who “with every decreed rise in the standard of living [become] so much more powerless” (Adorno and Horkheimer 39). Although I have attempted to broaden what I interpret to be Segal’s too narrow focus on machines by focusing on energy and land, he is nonetheless quite right when he explains that “the United States of *Player Piano* is, in a sense, itself a giant automated machine, with millions of parts. Not only is life for all citizens overwhelmingly automated, but every citizen has an assigned part in the social mechanism” (Segal, “Player Piano” 163). It is not only the former labourers like Hertz who are victims of this “technological rationale” by having their essence distilled down to joule output, but instead the entire population becomes an “objec[t] of the administered life” when subjected to the organizational logic of standardized testing that values human beings merely as inputs in the mechanized economy (Adorno and Horkheimer 120, 39).

The ‘unprecedented quality of life’ that Americans experience in this imagined future comes at the cost of regimental forms of organization, which results in “the overwhelming majority of citizens [becoming] excluded from . . . significant jobs” (Segal, “Player Piano” 163). There is a clear sense in the novel that this system of domination functions through a technical and organizational apparatus that *could*, but does not need to, resort to actual violence. For example, in a conversation between Paul, Reverend Lasher, and other members of the revolutionary group about the negative effects of this testing system, it is remarked that “everyone’s I.Q., as measured by the National Standard General Classification Test, was on public record—in Ilium, at the police station” (Vonnegut 89). That these records are held at the police station implies that state violence is a last resort to protect this status quo as, after the war, the state cracked down on riots and jailed dissenters under “the antisabotage laws” (Vonnegut 1). Results from these tests follow a person for the remainder of their life (Vonnegut 70). This produces significant tension and social conflict in the novel because the primary function of these tests is to reproduce a social hierarchy with as limited mobility as possible. Ed Finnerty remarks that it’s “about as rigid a hierarchy as you can get[.] . . . How’s somebody going to up his I.Q.?” (Vonnegut 93). This process of measurement and exclusion results in the widespread psycho-social feelings of anxiety, ennui, and depression that pervade the book. For example, the case of “Edgar R. B. Hagstrohm, who was statistically average in every respect save for the number of his initials” (Vonnegut 167). Hagstrohm is undoubtedly a ‘real-life’ foil to John Averageman from the Party’s propaganda-drama at the Meadows, who is reassured that his quality of life surpasses all the kings and queens of history, yet this *real* average man is depressed: he lacks meaningful work, betrays his wife, and lies to his children. He explains to his wife during a tour at his home involving the visiting Shah that “it’s the world, Wan—me and the

world. I'm no good to anybody, not in this world" (Vonnegut 167). Unlike John Averageman, the *real* average person is miserable despite the material goods they are 'fortunate' to have. His insistence that "I'm no good to anybody, not in this world," echoes Adorno and Horkheimer's remark that "the impotence and pliability of the masses grow with the quantitative increase in commodities allowed them" (Adorno and Horkheimer XV).

The efficiency of this standardized testing (or simply *standardization*) process is enabled by EPICAC and operates according to the same logic that determine all elements of the planned economy. Human beings, in this way, are measured using standardized instruments and are part of the same macroeconomic calculus as energy, expected crop yields, consumer demand, and whatever else factors into EPICAC's planning. Importantly, this means that the economy's smooth functioning relies on the centralized computer networks *and* the social instruments of quantification to organize production. And all of this, of course, requires tremendous amounts of energy (recall EPICAC's electricity requirements). In the context of the energy regime *regime's* instrumental logic, we can think of standardized testing as a quantitative mechanism that is analogous to how energy is measured as an input in the production process, much like Kroner compares motor-based productivity to the productivity of enslaved human labour. Human beings are reduced to quantifiable and fungible elements alongside the other types of energy used in the production process. In this sense, the domination of non-human nature that enables the New Economy's productive capacities becomes/is the domination of human beings—"domination over nature turns against the thinking subject himself" (Adorno and Horkheimer 26).

Rigid social hierarchies reinforce the economic causes of alienation in the novel by ensuring that land is distributed and used in ways that are compatible with the energy regime *regime's* control of space and the economic imperatives of the New Economy. In addition to how

Ilium is physically partitioned into classed spaces, social mores lead Iliumites to self-police how land is distributed. While social control in *Player Piano* is not physically violent as it is in *Nineteen Eighty-Four*, there are nevertheless social expectations related to IQ scores and employment that constrain people's freedom and mobility. One example that draws together all the elements I have discussed so far in this reading—the energy regime *regime's* narrative of progress, the distribution of land, the instrumentalist energy imperatives of the New Economy, and standardized testing—is Paul's purchase of farmland. When he first contemplates purchasing the farmhouse, he consciously reflects upon this act as one of defiance against the energy regime *regime's* control and distribution of people and capital over space. He imagines this purchase to be a blow against regime orthodoxy, which the narrator importantly describes as a refusal *to be used as an instrument* in their *vision of historical progress*: Paul “wondered if he didn't have enough to enable him simply to quit, to stop being the instrument of *any set of beliefs or any whim of history* that might raise hell with somebody's life. To live in a house by the side of a road...” (Vonnegut 115, emphasis added). However, he meets considerable opposition from the realtor, Dr. Pond, who explains that the farmhouse is not appropriate to his “station on the ladder of life” (Vonnegut 151). Pond warns Paul that “the way a man lives can destroy or increase the stature of his job—can increase or decrease the stability and prestige of the entire system” (Vonnegut 151). For Pond, Paul's living on the farm—and not on the Northwest side of the city with the other engineers and managers—is so threatening to the system that he declares “if you try to force me to sell it, I'll quit. . . . My classification number may be twice what yours is, but I have a certain amount of integrity” (Vonnegut 151).¹⁴ Imploring Paul to reconsider the purchase, he explains that “it has to be kept just as it is and it must be farmed. See how impossible it is?

¹⁴ Classification numbers correspond to one's IQ score and suitable potential employments; a lower number is better, which implies rank (e.g., 01 is better than 100).

Now, shall we go to Griffin Boulevard, where there's just the right house for the Manager of the Ilium Works?" (Vonnegut 151).

Paul's desire to break out of the system—"to stop being the instrument of any set of beliefs or any whim of history"—is "impossible" not only because his purchase breaks with Ilium's segregated city-planning, but because agriculture has changed under the New Economy (Vonnegut 115, 151). "There were no longer farmers," the narrator explains only four pages prior, "but only agricultural engineers. In the rich Iroquois Valley in Ilium County, thousands of settlers had once made their living from the soil. Now Doctor Ormand van Curler managed the farming of the whole county with a hundred men and several million dollars' worth of machinery" (Vonnegut 147). In addition to real estate and energy production facilities, farming and farmland has also come under the purview of energy regime *regime*'s control. This is part and parcel of the energy regime *regime*'s ongoing accumulation strategy that ascribes instrumental value to human labour and non-human nature (land), which are merely fungible inputs into a highly complex, energy-intensive, and machine-based economic system. What almost prevents Paul from this purchase is twofold: the material shifts in the New Economy—the consolidation of land and the centralization and mechanization of agriculture—and the social instruments of repression that reinforce this structure: standardized testing and mores about the suitability of one's station to one's living conditions. Ultimately, Paul lies to Pond, telling him that "this would be a hobby[,] . . . I'd go on living where I'm living now," because he realizes that Pond is an (real estate) agent of the precise "set of beliefs" and "whim of history" he is attempting to break free from (Vonnegut 115).

Concluding Thoughts and the Ghost Shirt Society Letter

I will conclude my reading of *Player Piano* by discussing the Ghost Shirt Society's Letter (GSSL) because it encapsulates many of the concerns I have discussed in this reading, while also providing an opportunity to think about how Vonnegut's understanding of machine production may differ from Orwell's. First, as anthropologist and scholar Sarah Phillips has pointed out, it is worth noting that Vonnegut's keen interest in comparative anthropology¹⁵ is clear in his naming the revolutionary group in the novel The Ghost Shirt Society, which was "a nod to the Ghost Dance of 1890, a Native American religious and political movement that Vonnegut had read about extensively" (Phillips). Although it could be argued that Vonnegut's analogy between the original Ghost Dance and his revolutionary group appropriates and/or erases Indigenous land theft by putting displaced working-class settlers in the place of dispossessed Indigenous people, there is also a sense in which naming the revolutionary group in the novel after the Ghost Dance is an indirect acknowledgement of colonial land theft and destruction of Indigenous knowledge practices. This is especially relevant in the context of the GSSL, which explores the profoundly anti-democratic nature of the changes Vonnegut was warning about in the postwar period.

In Orwell's novel, Goldstein's treatise uncritically assumes that machine production could create socioeconomic progress "without being used for any such purpose, but by a sort of automatic process" (Orwell 197). In contrast, *Player Piano* (both the GSSL letter and the text as a whole) conveys far more skepticism regarding any notion of historical progress, especially when progress is defined as an increase in energy-intensive productive capacities. Without

¹⁵ He undertook a master's degree in the subject at the University of Chicago after World War II but did not complete the project. According to Phillips, Vonnegut's proposed thesis was on "Mythologies of North American Nativistic Movements' that would 'undertake a comparison of the new mythologies that have come into being among North American Indian groups in the face of the culture crisis of white conquest'" (Phillips). 25 years later, he was subsequently awarded the MA from the University of Chicago's Anthropology Department for his 1963 novel *Cat's Cradle* (Phillips).

criticizing machines *in toto*, Vonnegut rejects the notion that mechanization is inevitably a form of progress, and in so doing raises interesting questions about the socioecological desirability and viability of a mode of production that believes “man [*sic*] is on earth to create more durable and efficient images of himself” (Vonnegut 302-303). In this sense, the letter poses and responds to what I understand to be the novel’s central debate: whether or not “the condition of man improves in direct ratio to the energy and devices for using energy put at his disposal” (Vonnegut 300). Here, Vonnegut’s *Player Piano* clearly wades into mid-century debates about how expanded access to energy would shape the future and anticipates twenty-first-century insights in Energy and Environmental Humanities that acknowledge how energy is a formative force in shaping our social, cultural ecological, political, and economic lives.

The GSSL critically interrogates the belief that machine production necessarily constitutes historical progress, as it opens by accusing those whom I have called the energy regime *regime* that “you, more than any of us, have spoken highly of progress recently, spoken highly of the good brought by great and continued material change” (Vonnegut 300). The GSSL charges that since it is no longer scientifically justifiable to assume the safety of perpetually accelerating energy production, consumption, and militarization, the regime’s conviction that “man improves in direct ratio to the energy and devices for using energy put at his disposal” is a “monumental demonstration of faith” (Vonnegut 300). This faith, to borrow from Adorno and Horkheimer, “has put aside the classic requirement of thinking about thought” (Adorno and Horkheimer 25). This faith is also challenged throughout the book in Paul’s *wavering faith* in the idea that “mankind really had come a long way,” and in Ed’s observation that the New Economy’s greater consumption of energy and production of goods has also resulted in increases in “dope addiction, alcoholism, and suicide . . . and divorce and juvenile delinquency” (Vonnegut 54). The GSSL

further undermines this faith in linear progress that can be measured by the “foot and pound and kilowatt” by analogy to monarchical dynasties of the past: “we . . . have changed our minds about the divine right of machines, efficiency, and organization, just as men of another age changed their minds about the divine right of kings, and about the divine rights of many other things” (Vonnegut 118, 300). In this sense, the GSSL inverts the association between increased productivity and progress by linking what the letter presents as a legitimate form of social progress (from monarchical rule to democracy) with a move *away* from machine production. In contrast to the energy regime *regime*’s faith that, as Chakrabarty eloquently puts it, “the mansion of modern freedoms stands on an ever-expanding base of fossil-fuel use,” the novel associates increased energy usage with *unfreedom* (Chakrabarty 208). I also believe that this explains why the GSSL repeats that the problem is neither machines themselves nor even their replacing human beings, but instead that these decisions have been made without the consent of the people: “replacement is not necessarily bad, but to do it without regard for the wishes of men is lawlessness” (Vonnegut 301).

The GSSL contains an important kernel of ecological thought. Vonnegut evokes the US’s decision to lead the world down a path of nuclear development when he warns that “man has survived Armageddon in order to enter the Eden of eternal peace, only to discover that everything he had looked forward to enjoying there, pride, dignity, self-respect, work worth doing, has been condemned as unfit for human consumption” (Vonnegut 300). The evocation of the nuclear bomb calls to mind an important intersection between widespread speculation about energy futures, anti-nuclear activism, and emerging environmental anxieties during the period: the simultaneously exciting and terrifying realization that human beings have the capacity to build an “Eden of eternal peace” or turn the planet into something “unfit for human

consumption” (Vonnegut 300). In *Player Piano*, “faith in lawless technological progress” has betrayed the promise of a future paradise, and has resulted instead in the widespread feeling “that man is on earth to create more durable and efficient images of himself” (Vonnegut 300). As in many other respects, here *Player Piano* is unfortunately prescient. Since 1952, the effects of the Great Acceleration have not produced an Eden, but rather global warming, deforestation, ocean acidification, mass extinction, and vast inequalities across the globe. And, as proponents of dating the Anthropocene to the postwar Great Acceleration would be quick to point out, there is no longer any doubt that (some) human beings have left “durable images” of ourselves.

6. Ray Bradbury’s *Fahrenheit 451* (1953)

Like Vonnegut’s, Bradbury’s anxieties about mid-century American society are socioecological: *Fahrenheit 451* shows how material forms of wastefulness that are produced by a hyperactive, consumerist society expend tremendous amounts of energy and reproduce negative social and ecological effects. The repressive forces in *Fahrenheit 451* are empowered by energy power much like the Inner Party’s vast surveillance apparatus in *Nineteen Eighty-Four*. The state disciplinary apparatus in *Fahrenheit 451* depends upon the expenditure of energy, which includes not only petrol, but electrical energy and instruments used to track and kill dissenters. While there is less clear emphasis in *Fahrenheit 451* than in *Nineteen Eighty-Four* and *Player Piano* on how energy power and political power are mutually reinforcing forms of socioecological control, I argue that Bradbury’s characters are the clearest example of energy-subjects: people whose nuclear-threatened, petrol-dependent, and hyperactive lives are conditioned by an accelerated pace of energy consumption. In *Fahrenheit 451*, the pace and structure of the narrative reflect the rapid expansion of energy consumption that is associated

with the Great Acceleration and postwar consumer capitalism. Critics frequently focus on the themes of censorship, conformity, massification, and consumerism in the novel, yet there is little attention paid to the how the novel positions speed, acceleration, and instant gratification as central, degenerative features of American culture. I argue that the accelerated nature of the narrative, the textual emphasis on pace, and the wasteful uses of energy in the novel contribute to Bradbury's broader warning about how consumerism reproduces commodifying, instrumentalist, and exploitative relationships among humans and between humans and non-human nature. In this context, Bradbury's choice to conclude the novel with the nuclear bomb is not symbolic, as critics have suggested, but rather is the final product of a wasteful and exploitative "society alienated from itself" (Adorno and Horkheimer 120).

Criticism

As with *Nineteen Eighty-Four*, critics have tended to focus on Bradbury's anxieties about how control of information—limiting access to knowledge and distorting historical fact—can be used to manipulate a citizenry. Like Orwell, Bradbury warns that free thought is imperiled by limits to free expression, yet, as Booker notes, Bradbury's subjects more closely resemble the docile and dopamine-addicted inhabitants of Huxley's *Brave New World* or Vonnegut's *Player Piano* than Orwell's impoverished Oceanians. Booker argues that

Of all major dystopian fictions it is perhaps Bradbury's that focuses most intensely on literature and on the attempts of an oppressive regime to limit the access of the populace to literature. [. . .] The entire culture of this society seems designed precisely to numb the minds of the populace and to prevent them from experiencing any real thought or feeling, much in the mode of *Brave New World*. (Booker, *Impulse* 106)

Concurring with Booker, Jack Zipes implicates the burgeoning postwar marriage of science, industry, and culture in creating the passive and docile population depicted in *Fahrenheit 451*. Zipes argues that “Bradbury wants to get at the roots of American conformity and immediately points a finger at the complicity of state and industry for using technology to produce television programs, gambling sports games, amusement parks, and advertising to block self-reflection and blank out the potential for alternative ways of living” (Zipes 185). Although these critics have emphasized Bradbury’s clear concerns about a political culture of conformity, there is little if any engagement with how this repressive culture’s reliance on technology—to say nothing of book burning—is itself reliant upon seemingly endless reservoirs of energy. This is quite an oversight given the novel’s conscious critique of consumerism, wastefulness, and reliance on electrified forms of technology, which convey Bradbury’s awareness of broad socioecological and economic shifts in the postwar period that historians now refer to as the Great Acceleration. In fact, a sense of *acceleration* pervades the novel, yet critics have failed to appreciate the socioecological implications of what MacDonald argues is “fiction’s basic reliance on propulsive devices; elementary units of charge that power action, event and consciousness” (MacDonald 5).

As with Orwell’s *Nineteen Eighty-Four*, critical readings of *Fahrenheit 451* also typically argue that Bradbury’s novel must be read in the context of the cultural and military conflicts of the Cold War. A synecdoche for the decline of free speech and thought, book burning is a symbolic element shared between these two texts (recall the “memory hole” where Winston makes facts ‘disappear’ in *Nineteen Eighty-Four*). Bradbury’s anxieties, however, are responsive to repressive anti-communist elements in Cold War America during the 1940s and 1950s. Malisa Kurtz has argued that socially engaged science fiction “was one of the few spaces where stories such as Bradbury’s were free to pursue critiques of McCarthyism and the political conservatism

of the US. As Judith Merrill points out, in the 1950s ‘social science fiction became, for a time, virtually the only vehicle of political dissent’” (Kurtz 138). As I explained earlier in the chapter, dystopian SF often drew inspiration from fears of nuclear annihilation that circulated in popular culture during the Cold War nuclear arms race between the US and the USSR. Critics have interpreted the nuclear event that concludes Bradbury’s novel as a metaphor for the dramatic change needed to bring about American cultural and spiritual renewal. Stableford argues that in many Anglo-American dystopian SF novels produced in the immediate postwar years even such a catastrophic event as nuclear holocaust provided “a sense that a decisive interruption of technological progress might be a blessing in disguise” (Stableford “SF 131). While *Fahrenheit 451* “surely draws upon the widespread nuclear fears of the early 1950s,” Booker nonetheless concludes that “the nuclear holocaust is pictured as a sort of cleansing that brings the potential of new birth” (Booker, *Monsters* 82). Similarly, and though he only briefly discusses the novel in the chapter “Ecology and Dystopia” in *The Cambridge Companion to Utopian Literature*, Stableford endorses a reading of the novel as an essentially “Orwellian fantasy”—by which he seems to mean *not* concerned with the environment in any meaningful sense—whose depiction of nature is symbolic: “it is the wilderness that ultimately provides a refuge for the last custodians of literary value” (Stableford, “Dystopia” 269). By reducing nuclear weapons and non-human nature to symbols in the novel, critics have not been able to account for *Fahrenheit 451*’s persistent and explicit anxieties about how wasteful American consumerism is a *material problem*, which is rooted in energy consumption and reproduces alienating relationships both between human beings and between humans and non-human nature. Rather than a symbolic event, I argue that Bradbury depicts the detonation of the nuclear bomb as the material

culmination of an energy-obsessed, hyper-consumptive, and wasteful culture that consumes itself in a final act of destructive hubris.

Part One: Energetics: The Pace of the Text

The pace of *Fahrenheit 451* reflects the unfolding process in the early postwar years that environmental historians call the Great Acceleration, which depended upon a massive expansion in access to cheap energy and resulted in unparalleled economic and population growth. Bradbury deliberately draws attention to the formative role that energy plays in powering the petrol-obsessed, nuclear-threatened, and hyperactive society that he depicts, yet the criticism on *Fahrenheit 451* has reproduced the misleading tendency in literary scholarship more broadly that assumes that energy is of secondary importance to more traditionally ‘literary’ elements like symbolism, character development, setting, and so on. Szeman and Boyer argue that this unfortunate tendency is widespread in “contemporary discussions about energy in relation to the environment,” which “imagine energy as an input into modern social and material processes that doesn’t alter their character or nature very much, if at all” (Szeman and Boyer 3). In his influential 1960 monograph *New Maps of Hell*, Kingsley Amis notices the breakneck pace of *Fahrenheit 451*, yet as he points out, this “fast and scaring” quality “is a virtue hard to illustrate by quotation” (Amis 109). Keeping in mind MacDonald’s insight that “like the laws of thermodynamics, fiction relies on momentum and transference, . . . conserving and converting energy and resources,” I argue that Bradbury foregrounds the motifs of *speed*, *acceleration*, and *instant gratification* to warn that mid-century America was barrelling towards catastrophe (MacDonald 5).

Changes in transportation and mobility, for Bradbury, are quintessential signs of the broader socioecological, economic, and cultural shifts that he identifies with the twentieth century, such as rapidly accelerating economic and population growth and the commodification and massification of cultural products designed to be enjoyed quickly and disposably. Explaining the origins of book burning, the novel's main antagonist, Beatty, complains to the protagonist, Guy Montag, that "once, books appealed to a few people, here, there, everywhere. They could afford to be different. The world was roomy. But then the world got full of eyes and elbows and mouths. Double, triple, quadruple population. Films and radios, magazines, books levelled down to a sort of paste pudding norm, do you follow me?" (Bradbury 54). As the conversation continues, Beatty likens the process of *massification* to *acceleration* in the twentieth century: "Picture it. Nineteenth-century man with his horses, dogs, carts, *slow motion*. Then, in the twentieth century, *speed up your camera*. Books cut shorter. Condensations, Digests. Tabloids. Everything boils down to the gag, the snap ending" (Bradbury 54, emphasis added). The frequently emphasized themes in the criticism on *Fahrenheit 451*, like massification, conformity, and consumerism, cannot be fully understood in isolation from the material sources that power this "fast and scaring narrative," which is replete with images of "snap" cultural goods like fast-moving cars, advertisements, and films (Amis 109; Bradbury 54).

Perpetual War, Endless Energy, Instantaneous Waste

Like Orwell and Vonnegut, Bradbury engages with the debates surrounding nuclear technologies in the 1940s and 1950s that were often framed in terms of competing visions of the future. Like their British counterparts in *Nineteen Eighty-Four*, Bradbury's future Americans live under the threat of perpetual war, which is extremely energy intensive. As the narrator explains,

“a radio hummed somewhere. ‘. . . war may be declared any hour. This country stands ready to defend its—’ . . . The firehouse trembled as a great flight of jet planes whistled a single note across the black morning sky” (Bradbury 32). Planes and jets scream overhead throughout the novel, not least importantly in the novel’s conclusion when the city is reduced to rubble, and characters openly express frustration and confusion about their omnipresence: “Every hour so many damn things in the sky! How in hell did those bombers get up there every single second of our lives!” (Bradbury 73). Bradbury’s critical anti-war position and opposition to the suppression of dissident voices during the 1950s in America is clear in the remainder of this passage, which links perpetual war to underdevelopment outside of the US because of American political and military aggression. Montag asks, “why doesn’t someone want to talk about it? We’ve started and won two atomic wars since 1960. Is it because we’re having so much fun at home we’ve forgotten the world? Is it because we’re so rich and the rest of the world’s so poor and we just don’t care if they are?” (Bradbury 73). This is an important passage for two reasons. On one hand, it rejects the assertion by proponents of nuclear weapons that nuclear deterrence will prevent the continued outbreak of global conflict. Instead, it echoes Orwell’s emphasis on the connection between war and economic inequality by suggesting that American geopolitical supremacy and standards of living are linked with poverty and ongoing conflict all over the world. Critics have remarked that “Bradbury’s work is unusual among major science fiction writers in its consistent antitechnology stance,” and in this sense, he appears to be highly suspicious of the idea that techno-scientific developments, such as nuclear weapons, will solve social, economic, and political problems (Booker, *Monsters* 80). On the other hand, and more explicitly related to energy consumption, Montag questions the persistent presence of bomber planes that apparently go unnoticed and undiscussed. Similar to how the narrator in *Nineteen*

Eighty-Four comments that surveillance helicopters dart around endlessly in the book, Montag wonders “how in hell did those bombers get up there every single second of our lives! Why doesn’t someone want to talk about it?” (Bradbury 73). In line with recent insights from the Energy Humanities, the novel acknowledges the omnipresence of energy consumption and even asks why it so often goes unnoticed. This is reiterated when Montag reflects upon the amount of petrol firefighters consume during their book burnings, as I will discuss shortly. Again echoing Orwell, wastefulness is central to how the novel depicts the omnipresence of energy, both through the constant presence of planes, automobiles, and petrol, and also in the recurring idea that this dystopian future is a snapshot of life in the “age of the disposable tissue” (Bradbury 17).

Planes and automobiles, however, do not merely represent war or surveillance or an energy unconscious like helicopters do in *Nineteen Eighty-Four*, but also a shift in American culture towards wastefulness, instant gratification, hyperactivity, and acceleration. Echoing Adorno and Horkheimer’s injunction that “the coercive nature of society alienated from itself” is held together by “automobiles, bombs, and movies,” Bradbury’s dystopia is held together by fast-moving vehicles, violence, and advertisements (Adorno and Horkheimer 120). Bradbury implies throughout the novel that these cultural changes are the result of an economically productive yet ecologically destructive American way of life. Early in the novel, Clarisse explains to Montag how advancements in advertising have managed to adjust to rapid developments in car manufacturing. She asks, “have you seen the two-hundred-foot-long billboards in the country beyond town? Did you know that once billboards were only twenty feet long? But cars started rushing by so quickly they had to stretch the advertising out so it would last” (Bradbury 8). Advertising is one element of American culture that *has kept pace* with the expanded use of energy and the accelerated pace of life that characterizes the novel. Speed and vehicles are

frequently associated with death in the novel, which suggests that Bradbury, like Vonnegut, feared that increases in energy consumption and technological developments (such as in vehicles) might just as easily produce negative as positive outcomes. In fact, Clarisse—whose family resists hyper-consumerist culture and for this reason are referred to by Beatty as “odd ducks,” “anti-social,” and “a time bomb”—is killed by a fast-moving vehicle in a moment of rather heavy-handed irony (as are numerous animals). Yet, despite her presence as a key figure in the first third of the book, her life is fleeting and death instantaneous: barely addressed and occurring off-screen so to speak, as Montag remarks that “she’s gone now, I think, dead. I can’t even remember her face” (Bradbury 60). Clarisse’s quick death and Montag’s almost immediate inability to recall her face conveys the novel’s self-awareness about how the accelerated pace of American culture presumes abundant sources of energy and reproduces a shortness of attention span that “boils [everything] down to the gag, the snap ending” (Bradbury 54).

In addition to the ubiquity of vehicles, the novel also presents the destructive burning of houses, libraries, books, and human beings as part of the ‘wasteful’ culture Bradbury depicts. Critics tend to focus on Bradbury’s satirizing of censorship in the US during the Red Scare in the 1950s by presenting a society in which heretics are burned alive for the possession of literary materials, yet the novel also frames these burning events as signs of the “age of the disposable tissue” for their wastefulness in a double sense (Bradbury 17). This is conveyed through Montag’s feelings of unease upon realizing that his profession is incredibly wasteful in terms of both literal energy (petrol) and human creative energy. For him, these are clearly related. Reflecting on the irony that firefighters’ hoses spray petrol rather than water, he explains to his wife, Mildred, that ““last night I thought about all the kerosene I’ve used in the past ten years. And I thought about books. And for the first time I realized that a man was behind each one of

the books” (Bradbury 51-52). Here, the exorbitant waste of petrol is placed alongside the creative human efforts that are ‘wasted’ because of censorship: “it took some man a lifetime maybe to put some of his thoughts down, looking around at the world and life, and then I came along in two minutes and boom! It’s all over” (Bradbury 52). Notably, the description of this doubly wasteful burning (the human life and the creative effort) as *instantaneous*—“boom! It’s all over”—foreshadows the description of the nuclear bomb in the novel’s climax: “once the bomb release was yanked, it was over” (Bradbury 158). For Bradbury, the bomb and its capacity to bring instant annihilation are products of the twentieth-century’s breakneck pace and wastefulness, which hardly leaves time even for death: “as quick as the whisper of a scythe the war was finished” (Bradbury 158).

Part Two: Waste and Alienation

The association between wastefulness and social alienation is most clear in the novel in Clarisse’s father’s remark that theirs “is the age of the disposable tissue. Blow your nose on a person, wad them, flush them away, reach for another, blow, wad, flush” (Bradbury 17). The term “disposable” applies not only to the cultural works that are thoughtlessly destroyed in book burnings, but to the ways that people mindlessly consume, selfishly use each other, and flagrantly disregard the value of non-human animal lives. I believe that critics have focused too narrowly on book burning and censorship, which is unsurprising given the book’s title and overt themes, and the crude but nonetheless important fact that as literary critics we are ourselves invested in books and find this a rather comfortable place to direct our analyses. It is stated on multiple occasions in the novel, however, that “books were only one type of receptacle where we stored a lot of things we were afraid we might forget” (Bradbury 82). Professor Faber, the

novel's primary fount of knowledge, explains that in addition to books, "the same infinite detail and awareness could be projected through the radios and televisions, but are not. No, no, it's not books at all you're looking for! Take it where you can find it, in old phonograph records, old motion pictures, and in old friends; look for it in nature and look for it in yourself" (Bradbury 82). Another place where this mysterious 'it' can be found is in uncommodified relationships between human beings, which is emphasized in a passage where Clarisse explains to Montag that architects and builders no longer construct homes with front porches:

My uncle says the architects got rid of the front porches because they didn't look well. But my uncle says that was merely rationalizing it; the real reason, hidden underneath, might be they didn't want people sitting like that, doing nothing, rocking, talking; that was the wrong kind of social life. People talked too much. And they had time to think. So they ran off with the porches. And the gardens, too. (Bradbury 63)

As I have argued, the novel is preoccupied with waste in terms of energy and wasting human creative efforts, yet this passage suggests that porches and gardens are no longer included in homes because they promote economically *unproductive*—*wasteful*—behaviours, such as "doing nothing, rocking, talking" (Bradbury 63). Unlike 'productive' behaviours (i.e., forms of consumption), sitting and talking is "the wrong kind of social life"; gardening produces the wrong type of *productivity*, as self-sufficiency in producing food or gardening for one's own enjoyment are not factored into the calculus of economic exchange. Bradbury evokes these activities as a historical alternative to the commodified and exploitative relationships among humans and between humans and non-human nature to emphasize what has been lost to hyper-consumption, immediate gratification, and wastefulness.

Alienation: 'Humans'

In contrast to the uncommodified types of behaviours and interpersonal interactions noted above, the interpersonal relationships depicted in Bradbury's dystopia are pervaded by conflict, alienation, and an inability to connect. Bradbury develops this theme by focusing on the unbridgeable gap in Montag and Mildred's marriage. Mildred spends most of her time watching and participating in TV 'read-alongs' with her TV 'family', while her relationship with Montag slowly declines until she eventually reports him for possessing books (effectively a death sentence). The situation is ironic because Mildred's actual family life is in freefall as she becomes further engaged with the standardized, mass-produced TV 'family'. In this sense, even what is often the most intimate social network—the family—is destroyed by commodification. Three of their four living room walls are massive electronic TV screens that provide an immersive viewing experience. Mildred repeatedly complains that Montag cannot or will not buy her the fourth wall that is “only two thousand dollars”—a third of his yearly pay—and all that stands between her and complete immersion in the fictional world of Hollywood production (Bradbury 20). There are at least two interesting and related ways to interpret this. In theatre and film, the “fourth wall” is a metaphor for the barrier between stage and audience, fiction and real life; here, the fourth wall is what *literally* separates Mildred and the completely commodified cultural experience that she desperately craves. She ‘participates’ in ‘readings’ that occur daily on her TV screens by contributing prewritten lines for the show, as she explains to Montag that “they mailed me my part this morning. . . . They write the script with one part missing. It's a new idea. The homemaker, that's me, is the missing part” (Bradbury 20). Mildred seems incapable of distinguishing between reality and fiction, despite the absence of this fourth wall, as she repeatedly insists that the family on the TV is *her family*, and that these are *real people*: “my

‘family’ is people. They tell me things; I laugh, they laugh!” (Bradbury 73). This can be interpreted to suggest that not only has culture become an industry through the application of technological processes of standardization and mass production, as Adorno and Horkheimer theorize, but the family has been pulled into this process of commodification (Adorno and Horkheimer 120). This creates considerable estrangement between Mildred and Montag. Upon returning home from a burning, Montag looks at Mildred asleep with her seashells (headphones) in and he realizes “suddenly she was so strange he couldn’t believe he knew her at all” (Bradbury 42). On the following page, after finally getting her attention, they both try with difficulty to remember how they met. This inability is juxtaposed with Mildred’s excitement at memorizing her scripted lines when she ‘participates’ in the commodified reproduction of family life contained in the TV dramas. The fictional family, in this sense, has replaced her actual family life.

The second and related way we can interpret this immersive, commodified cultural experience and its effects on Mildred and Montag’s relationship is by considering how it is described in terms of energy and how these screens relate to the infamous telescreens in *Nineteen Eighty-Four*. Like the products of all *industries*, the products of the culture industry depend upon tremendous amount of *actual* energy. Here, the viewing experience requires the production and operation of massive screens that block out external reality; the narrator refers to living rooms as “electric caves,” which is an indication of how much electricity these screens consume (Bradbury 139). Montag brings home a score of books from a burning with the hope that reading together will bring him and Mildred closer, yet she chastises him: “‘Books aren’t people. You read and I look around, but there isn’t anybody!’ [Montag] stared at the parlour that was dead and grey as the waters of an ocean that might teem with life if they switched on the electronic sun”

(Bradbury 73). Here, the TV screens are off and described as “dead and grey,” while the light that exudes from the screens when they are on is referred to as the “electric sun” (Bradbury 73). This poor reproduction of reality parallels how Mildred’s ‘family’ is a commodified reproduction of real familial relationships. While screens in both *Fahrenheit 451* and *Nineteen Eighty-Four* are portrayed as technologies of repression that consume tremendous amounts of electricity, Bradbury does not appear to be as concerned with surveillance and control as Orwell. Instead, resembling Vonnegut, Bradbury warns that the allure of commodities might compel us to subject ourselves to social mechanisms of control, docility, and conformity. Although critics have tended to emphasize Bradbury’s preoccupation with massification and conformism, it is important to underline *that energy acts as an enabling force in this process by providing the material means to produce cultural commodities that reinforce consumer capitalism*. The novel further emphasizes the socioecological implications of this by showing how the alienated interpersonal relationships produced by this energy-intensive media landscape are extended outward to the non-human world in *Fahrenheit 451*, as animals are treated (often barbarically) as mere instruments for human ends.

Alienation: Humans and Non-humans

While the novel clearly shows how interpersonal relationships suffer in this dystopian, hyperactive, consumerist vision of future America, the disconnect between humans and non-humans in the novel also contributes to Bradbury’s critique of wastefulness, consumption, and commodification. Alienating relations between human beings often spill over into bizarre and uncanny interactions with non-humans at key moments in the novel where animals are killed, degraded, and objectified by human beings. The novel shows that human beings can only thrive

in cooperation with non-human nature, and as I will discuss shortly, the nuclear bomb that concludes the novel can be interpreted as a warning about how such an instrumentalist relationship between humans and non-human nature can only end tragically. While the blurring of boundaries between living animals (human and non-human) and replicas in the dystopian tradition is more often associated with later novels such as Philip K. Dick's *Do Androids Dream of Electric Sheep?* (1968), Margaret Atwood's *Oryx and Crake* (2003), and Kazuo Ishiguro's *Never Let Me Go* (2005), Bradbury's novel appears to anticipate the anxieties related to extinction that these novels explore by imagining the creation of electrical beasts that uncannily resemble non-human animals. If, as the novel's antagonist Beatty suggests, the nineteenth-century person is associated with "horses, dogs, carts, slow motion," then the twentieth-century American consumer is associated with rapidly driving animals to extinction (Bradbury 54).

Bradbury foregrounds how human beings are alienated from non-human animals in a bizarre scene early in the novel that coincides with the first major conflict between Montag and Mildred. The novel first conveys how non-human animals in this future are reduced to the instrumental value that they offer human beings in the passage when Montag returns from a book burning to find his wife unconscious after she 'accidentally' overdoses on sleep medication. When men arrive to 'fix' Mildred, she is treated like a clogged pipe rather than a human being, as the narrator's tone and description convey: "the entire operation was not unlike the digging of a trench in one's yard. . . . Go on, anyway, shove the bore down, slush up the emptiness, if such a thing could be brought out in the throb of the *suction snake*" (Bradbury 14-15, emphasis added). The image of the mechanical snake sticks with Montag throughout the novel, and he later mentions it to Mildred during the conversation about the 'existence' of her TV family. Recalling for Mildred what he saw as they revived her, he recollects:

I saw the damnedest snake in the world the other night. It was dead but it was alive. It could see but it couldn't see. You want to see that snake. It's at Emergency Hospital where they filed a report on all the junk the snake got out of you! Would you like to go and check their file? Maybe you'd look under Guy Montag or maybe under Fear or War. Would you like to go to that house that burnt last night? And rake ashes for the bones of the woman who set fire to her own house! (Bradbury 73)

Mildred's life is saved by the "damnedest" snake that was "dead" but "alive," yet Montag is haunted by this image, much as he is by the image of the woman condemned to be burnt alive in her house. By suggesting that her file might be under "Guy Montag or maybe under Fear or War," he suggests that the cause of her overdose is related to the inhumane culture that burns people alive and fights atomic wars while the world starves (Bradbury 73). Her overdose on pills to help her sleep suggests that she is also coping with the effects of a hyperactive, overstimulated culture. The culture of death that pervades the novel is cleverly conveyed on multiple levels in this passage: the "dead" but "alive" animals, Mildred, the burnt woman, and war are all shown to be intimately related.

The relationship between replica animals and the culture of death that pervades the novel is clear in the instrumental functions that replica animals serve for human beings. These electrical animals can also be understood as analogues to Mildred's electricity-powered ersatz TV family, as they are 'coded' to interact in specific ways. Throughout the novel, Montag is pursued by the mechanical hound whose essence as a dog has been distilled into a killing machine, while real dogs are killed with shocking disregard in the novel. Bradbury no doubt recognized that this would be abhorrent to his readers. The mechanical hound is first introduced to the reader as an electric being which "slept but did not sleep, lived but did not live in its gently humming, gently

vibrating, softly illuminated kennel back in a dark corner of the firehouse” (Bradbury 24). Like the snake, the mechanical hound is described as alive and not alive, yet the hound is described even closer to a living being: its gentle (repeated twice) sleeping, which is also *not sleep* as the narrator suggests, resembles that of a living animal. This zoomorphism is deepened by the observation that it ‘sleeps’ in a “softly illuminated kennel back in a dark corner of the firehouse” (Bradbury 24). The juxtaposition of the sentimental description of the hound and its dwelling with the description of its instrumental function is jarring, however. In a moment of foreshadowing, Montag is nearly attacked by the hound at the fire-station early in the novel, yet Beatty tries to assuage his fears: “come off it. It doesn’t like or dislike. It just ‘functions.’ It’s like a lesson in ballistics. It has a trajectory we decide for it. It follows through. It targets itself, homes itself, and cuts off. It’s only copper wire, storage batteries, and electricity” (Bradbury 26). Previously described as resembling a living animal, the hound is subsequently characterized in purely instrumental, mechanical terms: it is an energy-consuming weapon—a battery and electricity-powered ballistic made of copper wire. The tension in the novel between Montag and the mechanical hound, which ultimately becomes a cat and mouse game, is essential to the book’s narrative trajectory, which in this symbolic way is *powered* by “copper wire, storage batteries, and electricity” (Bradbury 26). Bradbury describes the hound in mechanistic and scientized language to emphasize the cold, calculated nature of its operations: prey is “gripped in gentling paws while a four-inch hollow steel needle plunged down from the proboscis of the Hound to inject massive jolts of morphine or procaine” (Bradbury 25). Yet, it is not the hound itself but the *inhumanity* of its human programmers that is responsible for the estrangement between human beings and real animals in the novel: when the men were bored at the fire-station, “which was every night, the men slid down the brass poles, and set the ticking

combinations of the olfactory system of the Hound and let loose rats in the firehouse area-way, and sometimes chickens, and sometimes cats that would have to be drowned anyway, and there would be betting to see which the Hound would seize first” (Bradbury 24-25). Humans programme the artificial “olfactory system of the Hound” to track and kill real animals for no apparent reason other than boredom. A synecdoche for non-human nature *in toto*, real animals in the novel are both brutalized by human beings and replaced by *one-dimensional*, autonomy-less replicas that serve only instrumental functions.

The interactions between human beings and non-human animals in the novel suggests that Bradbury is worried that hyperactive, energy-intensive, and consumerist American culture is on a crash course with non-human nature. This is particularly clear in passages in the novel when animals are intentionally and callously run over by cars. For example, when Montag expresses his increasing frustration with his job to Mildred, she implores him to go for a drive: “The keys to the beetle are on the night table. I always like to drive fast when I feel that way. You get it up around ninety-five and you feel wonderful. Sometimes I drive all night and come back and you don’t know it. It’s fun out in the country. You hit rabbits, sometimes you hit dogs” (Bradbury 64).¹⁶ Here, Mildred’s claim that she drives “all night . . . out in the country” echoes the seemingly inexhaustible sources of energy that firefighters use to burn buildings and people. On these drives, vehicles, energy, and speed are portrayed as contributing to the gratuitous death of animals on the road. The death drive, which Bradbury likely intentionally puns, rather clearly suggests that humans are on a (self-destructive) crash course with the non-human world, as Mildred assumes that Montag’s discontent seeks an ecocidal outlet. Once Montag can no longer repress his agitation and rage, he lashes out by murdering Beatty and fleeing the city. While

¹⁶ The choice of the beetle is also a curious one given all the other options for cars Bradbury would have had to choose from.

Montag flees the city he is pursued by the mechanical hound, inverting this death drive depicted earlier in the novel. In the process, he escapes from the energy-intensive and hyperactivity city and the pace of the narrative winds down.

Montag, Nature, Conclusions

The energy-enabled, hyper-accelerated pace of the narrative slows as Montag leaves the city and enters the countryside. During this transition to a more traditionally natural setting, the novel shows a reconciliation between human and non-human nature in Montag's awareness of his own bodily animal nature, which is contrasted with the android-like electric-cave dwellers he passes on this physical and symbolic journey. Pursued by the hound, he imagines on his passage to the countryside "thousands on thousands of faces peering into yards, into alleys, and into the sky, faces hid by curtains, pale, night-frightened faces, like grey animals peering from electric caves, faces with grey colourless eyes, grey tongues and grey thoughts looking out through the numb flesh of the face" (Bradbury 139). Here, the theme of conformity that critics have identified—thousands and thousands of people with grey thoughts—is linked with energy consumption as a form of alienation and enclosure: these "thousands and thousands" of indiscernible "grey animals" are "frightened," "hid[ing]," and sequestered within their "electric caves" (Bradbury 139). "Electric caves" connotes an irony about science and technology's unfulfilled promises that both Vonnegut and Orwell have also identified: if "electric[ity]" is a symbol of progress, then "caves" (evoking pre-historic humans) betrays a *lack* of progress or even degeneration. The passage's emphasis on enclosure and isolation suggests that a greater dependence on energy and consumption is a form of self-imprisonment that severs relationships between human beings and with non-human nature. As the passage continues, the natural *power*

of the river enables him to float to freedom from both the enclosure of the electric caves (not unlike his own home with three electric walls) and the mechanical hound. The slow flow of the river is juxtaposed with the supercharged vehicles that pervade the novel, which are ironically claustrophobic forms of mobility (recall Montag's dismay at the ever-present jets screaming overhead, seemingly impossible to escape).

Arriving at the encampment, Montag is greeted by the community in exile, and the text's emphasis on his physical body as they gather around the fire can be read in direct opposition to the language used to describe the grey, electric cave-dwellers. Unlike the colourless and isolated automatons, the narrator describes Montag as a fleshy, live animal moved toward the fire by natural instinct: "there was a foolish and yet delicious sense of knowing himself as an animal come from the forest, drawn by the fire. He was a thing of brush and liquid eye, of fur and muzzle and hoof, he was a thing of horn and blood that would smell like autumn if you bled it out on the ground" (Bradbury 145-146). In the next paragraph, the narrator describes the quiet passage of time as people sat together around the fire, which here is a source of life and communion rather than immolation and dissolution: "there was a silence gathered all about that fire and the silence was in the men's faces, and time was there, time enough to sit by this rusting track under the trees, and look at the world and turn it over with the eyes" (Bradbury 146). This also calls to mind Clarisse's comments about porches and gardens as alternative types of social life, as here there is *time* to sit by the fire, which is opposed to the hyperactive, overstimulated pace of life in the city. Undoubtedly, it is possible to interpret these passages as a quaint if theoretically problematic form of return-to-naturism that fails to appreciate the Marxist ecological insight that there is no *outside of nature*. Yet, as I suggested in the literature review of *Fahrenheit 451*, I argue that we can read the novel's concluding pages more literally: as

Montag's refusal to continue to participate in a hyperactive society that encourages overconsumption, treats humans and non-humans barbarically, and is on a crash course with non-human nature. The nuclear bombing that follows is the tragic but inevitable outcome of a society that has lost its footing in non-human nature. This lesson is foreshadowed by Faber when he explains to Montag the legend of Antaeus and Hercules: "the giant wrestler, whose strength was incredible so long as he stood firmly on the earth. But when he was held, rootless, in mid-air, by Hercules, he perished easily" (Bradbury 83).

Bradbury's evocation of the nuclear bomb combines a critique of the Cold War nuclear arms race with an assertion of humankind's dependence on non-human nature. As I previously noted, the ongoing use of nuclear weapons in *Fahrenheit 451* is a clear rejection of the contemporaneous theory that the proliferation of nuclear weapons would ensure global peace. The novel's concluding passages, however, focus on humankind's vulnerability. As the city is attacked, a man named Granger who first welcomes Montag downplays the significance of nuclear weapons: "My grandfather showed me some V-2 rocket films once, fifty years ago. Have you ever seen the atom-bomb mushroom from two hundred miles up? It's a pinprick, it's nothing. With the wilderness all around it" (Bradbury 157). While the nuclear bomb has the capacity to level human civilization, the passage suggests that to dwell too long on this is to ironically miss the point. Even the most destructive creation in the history of humankind is but a "pinprick . . . [w]ith the wilderness all around it," which contradicts the tendency of both proponents and opponents to describe nuclear technologies as awe-inspiring evidence of humanity's godlike powers. Instead, the passage implies that the bomb is a self-destructive creation rooted in stupidity and hubris. The instrumentalization and commodification of non-human nature—of atoms, of animals, of energy—is not a sign of progress, but a path to

annihilation. Mid-century American society, Bradbury fears, will continue down an accelerated path of self-destruction, while non-human nature's deep time and slow rhythms will go on with or without us, for "we're allotted a little space on earth and . . . we survive in that wilderness that can take back what it has given" (Bradbury 157).

For all of Bradbury's incisive criticism of mid-century America as a hyperactive, energy-intensive, and consumerist powder-keg that alienates human beings from each other and from non-human nature, he nonetheless adopts a linear vision of history in the novel's final passages that may once have appeared hopeful, but now appears terribly misguided. The same man who calls attention to humankind's hubris, Granger, explains that there is hope in the future, and he justifies this belief by alluding to the legend of the Phoenix. He explains that there was "a silly damn bird called a Phoenix back before Christ: every few hundred years he built a pyre and burned himself up. He must have been first cousin to Man. But every time he burnt himself up he sprang out of the ashes, he got himself born all over again" (Bradbury 163). While the Phoenix would emerge out of the ashes only to repeat this cycle in perpetuity, Granger explains that there is reason for hope because human beings possess something that the Phoenix did not: "we know the damn silly thing we just did. We know all the damn silly things we've done for a thousand years, and as long as we know that and always have it around where we can see it, some day we'll stop making the goddam funeral pyres and jumping into the middle of them. We pick up a few more people that remember, every generation" (Bradbury 163). Unfortunately, such a Hegelian view of History as a linear process whereby Man (the right term in this antiquated telling of 'history') slowly but surely corrects the errors of the past is cold comfort for people suffering all over the planet in the present from climate disruption. This type of rhetoric often takes the form of incrementalism in environmental discourse, which Clive Hamilton has

identified in ‘Good Anthropocene’ arguments in recent years that suppose human beings can conquer non-human nature with the right tools and tricks, such as geo-engineering, which are also “founded on a belief in the ultimate benevolence of the whole, the order of things, a goodness that in the end transcends and defeats the structural obstacles, sufferings and moral lapses that seem to threaten it” (Hamilton 234). While it is perhaps unfair to criticize Bradbury or *Fahrenheit 451* for adopting a view of history that hinges upon the faith that the sins of the present will be absolved by our future descendants, it is nonetheless worth underlining that such ‘hope’ is wholly *unproductive* today. To adopt the logic of the future anterior, environmentalists now know that there will come a time in the future when it will have been too late to act, as the weight of historical emissions finally becomes too much for ecosystems to bear. Much as Orwell’s blind spot was the assumption that there would always be enough energy waiting in the ground to enable human beings to liberate ourselves through machine production (once we sort out the tricky politics of it), this faith in History and Man appears to be Bradbury’s.

Unfortunately, as we move further into whatever we decide to call the age we now live in—the Great Acceleration, the Anthropocene, the Sixth Great Extinction—it is becoming clearer almost daily that action cannot be deferred to the future, and that the effects of consumer capitalism have not left non-human nature unscathed: the historical and ongoing ecological effects of largely Western overdeveloped nations are not merely a pinprick in the wilderness. Instead, the rapid unfolding of the recent *history* of the Great Acceleration appears to be following a different trajectory, which means that we can no longer hope to iron out the kinks in the *future*. As Rachel Carson warned, “time is the essential ingredient; but in the modern world there is no time” (Carson 6).

Chapter II

Hope in Dystopian-Environmental Science Hybrids

1. Introduction

While students of dystopian fiction have long understood that “dystopias are inspired by fear; real fear inspired by real world events,” (Sargisson 10) this chapter argues that the reverse is also true: environmental and overpopulation anxieties in the 1960s were filtered through dystopianism as both a literary mode and an increasingly influential cultural heuristic. Stine Krøijer (2020) has recently claimed that in our current moment the lines between dystopian projections and environmental reality are increasingly blurred, writing that “the story of civilization processes gone environmentally wrong is far from confined to science fiction. Dystopian visions of future climate change are widespread in political life, often linked to critiques of the short-sightedness with which we have treated [the] Earth and (mis)managed our common resources” (Krøijer 49). What is somewhat less clear in the criticism on dystopian fiction and environmental histories is the extent to which the rich exchange between literary dystopianism and environmentalism is not a new phenomenon, but instead has its roots in the deeper historical process I have discussed throughout this dissertation: the postwar Great Acceleration. Like fears of nuclear weapons in the 1940s and 1950s, anxieties about population growth and the potential limits of human expansion captivated a generation in the 1960s and early 1970s. The idea that human beings might irrevocably alter the planet—whether through nuclear bombs, population growth, or chemical pesticides—was common currency in the 1960s, a revolutionary decade undergirded by a strong sense of social, political, and ecological crisis. During this period, widespread anxieties about overpopulation and environmental anxieties

merged, helping to create what would become one of the most widespread and enduring social movements of the twentieth century: the modern environmental movement. Emerging on the heels of the antinuclear movement, the modern environmental movement has warned of ecological crisis since the 1960s, while in the 1960s and 1970s dystopian narratives about overpopulation—or the “population bomb”—became a synecdoche for the growing environmental awareness that humankind was pushing natural limits.

In this chapter, I read Rachel Carson’s *Silent Spring* (1962) and Paul Ehrlich’s *The Population Bomb* (1968) as part of the dystopian tradition. Their adoption of dystopian rhetorical and formal strategies to warn the public about environmental degradation demonstrates the centrality of dystopianism to environmental thinking in the postwar period. I begin this chapter by situating their work within a historical account of the pervasive sense of environmental crisis during the 1960s and early 1970s, and how the modern environmental and anti-population growth movements took inspiration from the nuclear debates by framing their arguments in terms of hope, fear, and the habitability of the future. Like both sides of the nuclear debate, I argue that the modern environmental and anti-population growth movements drew inspiration from dystopianism as a burgeoning postwar cultural heuristic. This background will also be essential for the following chapter where I discuss how authors of dystopian fiction engaged in these debates during the same period. While the last chapter drew on Marxist ecology and the Energy Humanities to argue that dystopian fiction was “a survival strategy” for averting nuclear annihilation (Ramuglia and LeMenager 155), this chapter builds on the existing work that bridges the sciences and humanities in the fields of Environmental Humanities, ecocriticism, and utopian and dystopian studies by demonstrating that Carson and Ehrlich adopted dystopia as a “literatur[e] of recruitment”: “writing that fires the imagination and inspires interest in scientific

topics” (Killingsworth and Palmer, “SF” 175). Though critics have tended to focus on the apocalyptic elements of Carson’s *Silent Spring* and Ehrlich’s *The Population Bomb*, I argue that these texts employ formal and rhetorical strategies common to dystopian fiction to warn their readers of the real-world dystopias that are on the horizon. Far from one-dimensional environmental warnings about chemical pesticides or overpopulation, however, these texts establish “a dystopian structure of feeling” by showing that the threats to the environment they identify are both social *and* ecological—i.e., *socioecological* (Moylan, *Horizons* 150). Contrary to arguments that these texts are apocalyptic and afford little room for hope, I argue that these texts balance fear with measured hope for the future. The hope that they offer *within the text* is central to my second argument about these books: as dystopian texts, they appear to anticipate the critical turn in dystopian fiction in subsequent decades.

2. Historical Contexts: Twin Crises

The staggering scale and intensity of the social, economic, ecological, and political changes in the immediate postwar decades, which I have followed environmental historians in referring to as the Great Acceleration, combined with the widespread sense of vulnerability that emerged from the nuclear debates of the 1940s and 1950s to produce anxieties about two new looming crises: ecological degradation and overpopulation. Two types of growth are central to this ongoing history: economic and population. Unprecedented economic growth was made possible by massively expanded access to cheap forms of energy, which reshaped the ecological conditions of the planet. J.R. McNeill and Peter Engelke explain that “in the half century after 1950, the global economy grew sixfold. . . . Growth peaked between 1950 and 1973, a period that has been labeled the ‘golden age,’ a ‘Wirtschaftswunder’ (economic miracle)” (McNeill and

Engelke 128). This so called “economic miracle,” however, translated into an unprecedented assault on global ecological systems. Since the 1950s, these growth figures have translated into three-quarters of the human-caused loading of the atmosphere with carbon dioxide The number of motor vehicles on Earth increased from 40 million to 850 million. . . . In 1950 the world produced about 1 million tons of plastics but by 2015 that rose to nearly 300 million tons. In the same time span, the quantities of nitrogen synthesized (mainly for fertilizers) climbed from under 4 million tons to more than 85 million tons. (McNeill and Engelke 4)

Rapidly expanding access to energy and the related industrialization of agriculture also enabled unprecedented population growth by facilitating increased food production and urban development, as during this same period “the number of people nearly tripled, and the number of city dwellers rose from about 700 million to 3.7 billion” (McNeill and Engelke 4). Beginning in the 1950s, Green Revolution advancements in agricultural practices, chemical pesticides, and food science promised greater caloric production, yet much of this progress required an even greater use of fossil fuels (directly and indirectly) and massive amounts of ecologically toxic pesticides (Robertson 102). Rapid economic growth, population growth, and the growth of fossil fuel and pesticide usage was celebrated by some as a sign of rising standards of living, life expectancy, and state-capacity in developing and formerly colonized countries, but this also set the stage for increasingly widespread concerns about ecological limits.

A sense of crisis prevailed in environmental writing during the 1960s and early-1970s. Fears of an undesirable future, Frederick Buell notes, were shared among the “most prominent environmental apocalypticists, a list that includes Rachel Carson, Paul Ehrlich, and Donella Meadows and the Club of Rome, [who] painted, with vivid, apocalyptic imagery and intensity,

the terrible catastrophes and certain end of civilization looming just ahead” (F. Buell “Narrative” 262). These fears were shared not only by writers and activists with similar ideas about what the problem was and how to solve it, but by rival environmentalists who agreed that the future of the planet was in jeopardy if they could agree on nothing else.¹⁷ By 1972, a whole suite of related problems appeared to threaten the delicate balance of planetary ecology. Influenced by both Carson’s *Silent Spring* (1962) and Ehrlich’s *The Population Bomb* (1968), The Club of Rome’s *The Limits to Growth* (1972) identified the five greatest threats to humankind: “population, agricultural production, natural resources, industrial production, and pollution” (Meadows et al. 11-12). All of these concerns are present in various ways in the works of Carson and Ehrlich, which shaped a generation of environmental thinking and activism.

Crisis One: Ecological Degradation, Chemical Pesticides, and the Environmental Movement

The threats to human and non-human life posed by nuclear weapons and contamination coupled with rapid economic and demographic changes to generate a pervasive sense of crisis in the middle of the twentieth century. In this context, Libby Robin, Sverker Sörlin, and Paul Warde explain that “in the 1940s and 1950s the idea of ‘the environment,’ and the crisis about its future, emerged together. Prediction that the whole global system was falling into degradation was co-determined with the very discovery of that system” (Robin, Sörlin, and Warde 6-7). As a socioecological heuristic, the “environment” emerged as “a concept constructed in part by prediction and in part by fear of future catastrophe” (Robin, Sörlin, and Warde 6-7).¹⁸

¹⁷ Brian Stableford explains that “although Barry Commoner objected to Paul Ehrlich’s ‘neo-Malthusianism’ and Garrett Hardin’s ‘ecological Hobbesianism’, in *The Closing Circle: Man, Nature and Technology* (1971) his own arguments about the ‘debt to nature’ incurred by the false mythology of wealth-creation were no less apocalyptic” (Stableford, “SF” 138).

¹⁸ Lisa Garforth makes a similar claim, writing that “it can be said that the global environment as an object of social and political concern came into existence in part through narratives of future crisis” (Garforth, “EF” 238).

Responsive to new threats to the integrity of global ecological systems posed by advancements in warfare, chemical production, and energy-intensive industrial capitalism, “environmental thought since the late 1960s has been strongly associated with prophecies of doom, apocalyptic predictions, and dystopian scenarios” (Garforth, “Beyond” 393). McNeill and Engelke argue that while there are numerous factors that contributed to the emergence of modern environmental anxieties, “the best explanation might be the most obvious. Economic expansion threatened environmental conditions in a great many places. This caused a reaction among those concerned about their lives, health, and livelihoods. A global economic thesis generated its own antithesis, environmentalism” (McNeill and Engelke 184-185). The modern environmental movement, in other words, is a sobering collective response to the excesses generated by the so-called twentieth-century *economic miracle*.

The modern environmental movement also has roots in the antinuclear movement during the 1940s and 1950s, and it was not uncommon for environmentalists in the 1960s to have cut their teeth in the movement with opposition to nuclear weapons testing, as I explained in Chapter One. It is in the context of the antinuclear movement and the new discourse of the global ‘environment’ that the modern environmental movement adopted a future-oriented posture, warning of potential nuclear annihilation and/or ecological collapse. The increasingly global and urgent sense of exposure to risk, including fears about nuclear weapons and socioecological anxieties about chemical pesticides and human population growth, can help explain why the environmental movement shifted in under a decade from a fringe movement to encompass a sense of concern for the environment held by hundreds of millions of people across the world. It first found popular expression during the large-scale social, economic and political changes that took place in the late 1960s. In just three years between 1969 and

1972, the campaign groups Friends of the Earth (FoE), Greenpeace and the Natural Resources Defense Council (NRDC) were founded; communities across the USA participated in the first Earth Day; governments established their first environmental agencies; and the first major United Nations Conference on the Human Environment (UNCHE) was held in Stockholm, Sweden. (Haq and Paul 1)

While there were numerous and intersecting environmental concerns in the 1960s, such as nuclear contamination, water and air pollution, and wildlife conservation, chemical pesticides became a focal point for the burgeoning environmental movement. Debate over the widespread use of chemical pesticides offers one especially clear insight into how environmental anxieties, like the nuclear debates of previous decades, were framed in terms of competing visions of the future, as opponents and proponents of chemical pesticides weighed the prospect of ecological degradation against the promise of socioeconomic development.

Chemical Pesticides

Debates about chemical pesticides and contamination were influenced by existing anxieties regarding the spectre of an inhabitable future that spilled over from the nuclear debates, and as such proponents and opponents of chemical pesticides evoked images of the future that were both hopeful and fearful. Some *hoped* that pesticides would provide a powerful boon to ridding the world of disease while providing agricultural producers with the tools to increase food production, and others *feared* that pesticides might irrevocably damage ecosystems all over the planet and leave vulnerable populations pesticide-dependent for their main source of calories. Considerable discursive terrain was covered in arguments for and against chemical pesticides, which included questions about humankind's relationship to non-human nature, the ability to

cure disease and end hunger, the viability of technological solutions to environmental problems, the links between weapons manufacturing and chemical pesticides production, and the potential limits to economic and population growth. John Wills explains that “atoms and pesticides [were] post-war bedfellows. Both were fallout from World War II, products of the modern military-industrial complex, and subsequently marketed as miracle breakthroughs of the post-1945 era” (Wills 100). Whether one was hopeful or fearful regarding chemical pesticides, there was little doubt that they were “technological harbingers of a new age” (Wills 100).

Chemical Pesticides: Fears

While proponents of chemical pesticides portrayed them as essential weapons in a battle against threats to agriculture, fears regarding pesticides were widespread in the early 1960s. Anti-chemical pesticides activists drew parallels between nuclear weapons and pesticide contamination to warn about a potentially disastrous ecological future. Lawrence Buell explains that “the prospect of a sooner-or-later apocalypse by unintended environmental disaster came to seem likelier than apocalypse by deliberate nuclear machismo” (L. Buell, *Future* 4-5). Although environmental anxieties began to supplant fears of nuclear annihilation as the 1960s progressed, this did not deter activists from drawing parallels between bombs and chemical pesticides (L. Buell, *Future* 4-5). The analogy between bombs and chemical pesticides was productive for opponents of chemical pesticides because “bombs and pesticides [both] threatened total collapse” (Wills 102). One strategy adopted by anti-chemical pesticides activists was to point out similarities between the all-out attack on civilians during WWII and what were framed as all-out assaults on non-human nature by indiscriminate spraying of what Carson famously referred to as “biocides” (Carson 8). Anti-chemical pesticides advocates argued that ‘pests’, flora, birds, and

other animals that posed a threat to agricultural profits or recreational hunting and fishing (or in some cases were a mere inconvenience) were treated as domestic enemies that had to be vanquished: as if “it was a case of ‘man and insect locked in battle’” (Wills 91). Critics such as Robert Cushman Murphy¹⁹ emphasized that “the same arsenal that faced the Nazis was turned against insects. ‘The crusade to create a chemically sterile, insect-free world’ entailed the projection of nature as dangerous and evil” (Wills 91).

Much like the tragic irony that nuclear weapons testing from the 1950s onward often harmed the people they were intended to protect, the promise of a safe and abundant future enabled by chemical pesticides was complicated by the unequivocal risks that chemical pesticides posed. The analogy between bombs and pesticides was more than simply clever rhetoric, as there were scientifically measurable similarities between nuclear contamination and chemical pesticide exposure. The 1950s witnessed both nuclear fallout and chlorinated hydrocarbons raining down on unwitting American citizens: “both were front-line threats, on the doorstep and in the back yard of America, located in soil samples and garden turf alike. Chemicals and radiation had infiltrated the homeland” (Wills 102). For critics, the development and deployment of chemical pesticides was a utopian dream that had quickly become a dystopian nightmare, as misguided scientific efforts to control non-human nature backfired:

just as physics had joined with the military to produce the bomb that ended the war but also left the world on the brink of nuclear disaster, so had agricultural science, as Carson depicted it, joined with agribusiness to produce chemicals that increased agricultural production in the short run but in the long run threatened the environmental safety of the

¹⁹“ Ornithologist Robert Cushman Murphy told of “‘trigger happy ‘bombers wreaking havoc,’ as ‘[a]erial bombing of fire ants paralleled fire bombing in World War II, only rural areas, not cities being the target’” (Wills 91).

very citizens who prospered from the advances in farming technology. (Killingsworth and Palmer, "Narrative" 27-28)

Also like nuclear weapons, chemical pesticides were framed as essential to the American dream in the middle of the twentieth century.

Carson mobilized the prevailing sense of crisis in the United States to convey to her audience the urgency of curbing the use of chemical pesticides. In the process, she revealed that the hope of an American utopia of unlimited economic progress, industrial development, and control over non-human nature was a dystopia in the making. Her most famous text, *Silent Spring* (1962), "did not just offer a frightening dystopic vision for America, it also tore down a specific Utopia of the post-war era: the chemical world" (Wills 89). She showed that misguided attempts to control non-human nature might leave the planet uninhabitable, and in the wake of recent nuclear developments she expressed "skepticism toward the dominant faith of postwar America in science and human progress" (Lytle 120). The specific ways in which she staged her contemporary moment as creeping toward a real-world dystopia will be discussed at length shortly, but for now it is worth noting that she was part of a broader movement, which included Ehrlich, that intentionally set out to upset the image of a chemically-enabled future paradise by "branding the pesticides industry 'a child of the Second World War' and representing pesticides' consequences with imagery of carnage: weaponry, killing, victimage, extermination, corpses, massacre, conquest" (L. Buell *Writing* 39).

Chemical Pesticides: Hopes

Despite the vocal opposition to chemical pesticides by scientists and members of the environmentally concerned public, there was strong pushback from proponents who believed that

these new chemical technologies were indispensable to making the dream of a prosperous and abundant Earth a reality. While critics of chemical pesticides emphasized the dangers of chemical pollution and the similarities between nuclear and pesticide contamination, proponents dismissed these concerns as frivolous complaints from hippies and idealists who did not understand the economic benefits afforded by these new miracle technologies. Carson drew special ire from representatives of the petrochemical industry when they publicly defended their vision of a clean and abundant America fuelled by chemicals. One spokesperson warned that ““If man were to faithfully follow the teachings of Miss Carson, we would return to the Dark Ages, and the insects and diseases and vermin would once again inherit the earth”” (Wills 108).

Proponents, in this sense, threatened opponents with the reactionary logic of anti-utopianism: while pesticides may have drawbacks, the alternative of no pesticides is far worse. In contrast to this negative vision of the future without chemical pesticides that proponents argued would resemble the pest-infested past, proponents linked these inventions to numerous utopian images, including Euro-American patriotism, disease eradication, economic growth and increased productivity, and the ability to provide sustenance to growing populations. Such promises have their origins in WWII, and ““tied to the civilian deployment of wartime products (from penicillin to napalm), new pesticides entered the market as miracle cures”” (Wills 89). By the early 1960s, these promises were an essential part of the new vision of postwar American life:

The sale of DDT connected with naive hopes of a realm of limitless energy (from sources such as nuclear power) and limitless crops (from pesticides). A new chemical world was in tune with a post-war vision of white cities, clean living and material abundance. A rosy American future rested on a new wave of product lines. The promise of a better life was

evident in industrial advertising: DuPont, for example, offered “Better things for better living . . . through chemistry.” (Wills 89)

Chemical pesticides, like nuclear technologies, were framed as technological breakthroughs that would harbingers a clean, safe, and abundant future. Just as the dreams of energy abundance I discussed in the previous chapter required physicists to unlock the secrets of the atom, the hopefulness surrounding pesticides hinged significantly on chemists’ ability to overwrite the code of naturally functioning ecosystems.

Arguably the central promise of chemical pesticides was the ability to control non-human nature to the benefit of human beings’ safety and prosperity. While biologists like Carson and Ehrlich provided compelling scientific evidence that such chemical incursions into complex ecosystems tended to be self-defeating, the appeal of some chlorinated hydrocarbons like DDT was the promise to save lives all over the world by targeting disease-carrying insects. As JB Flippen explains, perceptions of risk related to DDT and similar pesticides were favourably shaped by Paul Hermann Müller’s winning the Nobel Prize for the compound’s efficacy against malaria-carrying mosquitos (Flippen 442). This is one of the clearest links between chemical pesticides, ecological degradation, and population dynamics, as a key vector of growing populations was “a tremendous surge in life expectancy” that resulted from the eradication of transmissible diseases, which enabled the “survival of billions of children who in earlier times would have died very young” (McNeill and Engelke 45). In this way, chemical pesticides were not only central to industrial and agricultural development but were framed as net-positives for public health by limiting exposure to the unseen harms posed by microscopic diseases.

The ability to ‘control’ non-human nature—to eradicate fungi, plants, and animals that were invasive, destroyed crops, carried illnesses, or were in some way inconvenient—was

viewed by proponents of chemical pesticides as necessary to keep agricultural output on pace with growing human populations. While opponents like Carson, Ehrlich, and Commoner warned of biological magnification and the complete absence of the precautionary principle in the widespread application of chemical pesticides, proponents insisted that chemical pesticides would not only create clean and abundant cities, but that these pesticides were indispensable to meeting global food demands. The Green Revolution, which promised consistent and dramatically improved food production, entailed the use of chemical pesticides, the creation of “hybrid grains,” “agrarian restructuring and rural development” programs, and agricultural modernization techniques that “promoted high-yield varieties of wheat, rice, and other staple crops” (Robertson 66, 102). One of the main ways that environmental concerns were linked to population concerns was through these promises of increasing efficiency and crop yields, as chemical pesticides allowed for greater yields, but also created global dependency on these chemical innovations. Small and large-scale farming “grew heavily dependent upon chemical poisons to control plant and animal pests,” and in the United States alone, “by the late 1960s, farmers purchased over a billion pounds of pesticides annually, relying upon approximately nine hundred chemical agents sold in thousands of different preparations” (Flippen 442).

The promise and peril of chemical pesticides was one of the clearest ways that environmental concerns merged with those regarding population dynamics. On one hand, pesticides “promised greater productivity and a lifeline for farmers struggling to make profit in a harsher economic climate. [. . .] They symbolised a quest for maximum yield and perfect, factory-like produce” (Will 85). Yet, on the other hand, these pesticides presented a catch-22: the ecosystems on which people depended became increasingly degraded by the same pesticides that were supposed to help them avoid hunger and make their lives cleaner and healthier. These new

pesticides threatened to “upset the delicate and complex ecological balance. To increase food production and thus stave off famine, governments and farmers had to clear forests and rely on dangerous pesticides, in both cases transforming complex and sustainable ecosystems into simple and unstable ones” (Horowitz 198). So, when the modern environmental movement gained widespread support by the late 1960s, it was already engaged in questions related to what to do about human population growth: who or what is responsible for human population growth? To what extent is human population growth responsible for *socioecological* problems like environmental degradation or pollution? Does an emphasis on human population growth deflect attention from other possible causes of environmental degradation, such as the use of science to dominate non-human nature, increasing levels of energy and resource consumption in Western societies, or the global boom in energy extractivism? While not reducible to each other, the modern environmental movement and the anti-population growth movement co-evolved, in part through the debates regarding chemical pesticides, the relations between human and non-human nature, and the potential limits to growth facing humankind.

Crisis Two: Overpopulation

In the 1960s, intersecting anxieties about ecological degradation and swelling human population numbers gave birth to an environmental movement that was pervaded by a deep sense of crisis and concern for the future. In this context, Andrew Ross argues that “of all the new social movements of the 1960s and 1970s, ‘the ecology movement was the one most tied to an explicit set of theses about the future: how to avoid a disastrous, and generate a better, future’” (Ross qtd. in Garforth, “EF” 239). An understanding of the origins of modern human population concerns allows us to see more clearly how population anxieties in the postwar period were

responsive to the historical shifts associated with the Great Acceleration, and how these concerns were animated by the same prevailing sense of crisis initiated by nuclear weapons discourse that shaped postwar environmental anxieties. While overpopulation concerns were not always related to the environment,²⁰ as I will show shortly, scholars like Thomas Robertson and Ursula Heise have noted that overpopulation was a central if controversial topic in environmental debates about the future in the 1960s (Robertson XV; Heise 68). The postwar anti-population growth movement has often been referred to as neo-Malthusian, which is a capacious term that signifies the belief that *if* human population numbers exceed natural limits, *then* social, political, economic, and environmental calamity will result. While there are reasons to question the legitimacy of these arguments—and even more reasons to be skeptical about the emphasis on *whom/what* is to blame for these calamities—it is also important to distinguish between Thomas Malthus’s views on population dynamics and postwar anti-population growth anxieties, and to distinguish further among the various strains of so-called neo-Malthusianism during the 1960s.

As I will show, Malthus was thoroughly anti-utopian: he believed that poverty, inequality, and suffering were “grinding law[s] of necessity” (Malthus qtd. in Foster, *ME* 97) that resulted from human population dynamics, and to try address these problems was to “court bigger disasters” (Foster, *ME* 97). This was emphatically *not* the position of postwar anti-population growth advocates who, instead, more closely adhered to dystopian logic by projecting their fears of an overpopulated planet and advocating strategies to prevent it, regardless of whether or not these strategies were progressive (such as fighting for sex education and free contraceptives, educational and economic sex/gender equality, and women’s reproductive

²⁰ Heise reminds readers that “concern over global human population growth is neither limited to the post–World War II era nor specifically environmentalist in its roots. At least since Thomas Malthus’s *Essay on the Principle of Population* (1798), the rapid growth of humankind has periodically given rise to deep worries and dire predictions about the future” (Heise 71).

freedoms/right to choose) or morally abhorrent (promoting racist and white supremacist ideologies, eugenics, and forced sterilization). In other words, postwar overpopulation fears were accompanied by the hope that an alternative future was possible, however this was defined, which signifies a turn away from Malthus's resigned acceptance of starvation, disease, and suffering. In this context, Brian Stableford insightfully remarks that "it was in order to assist consideration of the darker aspects of future possibility, including Malthusian anxieties, that the word 'dystopia' was eventually coined" (Stableford, "Dystopia" 261). Only three decades after Malthus's death, the word 'dystopia' would enter public discourse in a speech delivered at the British Parliament by John Stuart Mill in 1868 (Claeys, *DANH* 273).

As I will also show in this section, the anti-population growth movement was far from monolithic. Ehrlich and other environmentally conscious scientists and activists were *primarily* concerned with ecological issues like the use of chemical pesticides and unsustainable levels of Western consumption, *which translated into a concern about human population dynamics*. Figures like Ehrlich believed that slowing human population growth—especially though not exclusively among the world's richest nations—was a politically efficacious means of resolving otherwise intractable environmental challenges. Yet, it is also true that influential figures like Hugh Moore (who coined the term *population bomb*) and factions of Zero Population Growth (ZPG) displayed far more concern about perceived threats to American economic and political supremacy and declining middle-class standards of living than ecological issues. These anxieties often appeared to be motivated by an opposition to population growth among racialized populations both inside and outside of the United States. In this way, environmental concerns about land scarcity and 'urban' (water and air) pollution were a front for class-based, racist, and xenophobic desires to limit immigration and population growth among communities of colour.

Thomas Malthus and Anti-Utopianism

Unlike postwar population anxieties that responded to unprecedented human population growth that was enabled by macroeconomic shifts (expanded access to energy, urbanization, increase agricultural productivity) and new developments in medicine and sanitation regimes, Malthus's eighteenth-century fears regarding the dangers of human population growth stemmed from the simple observation that "births in his parish far outnumbered deaths" (Robertson 4). John Bellamy Foster, Thomas Robertson, and Emily Klancher Merchant have convincingly argued that Malthus's population anxieties in his most famous and controversial work *Essay on the Principle of Population* (1798) display a far greater concern with how human population growth upsets class-based social dynamics and exacerbates existing social cleavages than with theorizing the relationship between population and natural environments. Adopting a circular form of logic, Malthus took for granted that "all of the world's problems stemmed from the pressure of population on natural resources, and had therefore viewed all of the world's problems as proof that human population *was* pressing on natural resources" (Merchant, "Malthusianism" 257, emphasis original). Despite his close association with modern overpopulation discourse, Foster explains that "Malthus himself did not use the term 'overpopulation' in advancing his argument. . . . Natural checks on population were so effective, in Malthus's late-eighteenth-century perspective, that overpopulation in the sense of the eventual overstocking of the globe with human inhabitants was not the thing to be feared" (Foster, *ME* 92). So, while Malthus believed that "the power of population is infinitely greater than the power in the earth to produce subsistence for man" (Malthus qtd. in Robertson 5), his primary anxiety was about how an increasingly large and impoverished class threatened to upset the existing social order, which

was grounded in his waning faith “in human beings, especially poor people, who he believed lacked the discipline to restrain their sexual urges” (Robertson 4). As I will explain shortly, many of these biases are retained in neo-Malthusian anxieties about class conflict, declining standards of living, and the ‘moral effects’ of overpopulation.

Malthus has been referred to as *anti-utopian* because of his inclination to naturalize human suffering, as he believed that “human societies always require numerical restriction by war, famine and disease” (Stableford, “Dystopia” 260). He believed these ‘checks’ on population acted as homeostatic forces that drive a population up or down towards an assumed (and unscientific) equilibrium state or natural capacity. Such checks, including poverty, conflict, famine, and disease, “are ministers of depopulation” that keep humankind’s population in equilibrium with nature’s “natural rate of growth of subsistence” (Malthus qtd. in Foster, *ME* 97, 92-93). For Malthus, Stableford claims, “debates regarding the precise political shape of a future utopian state were pointless, because all futuristic dreams of universal peace and plenty were impossible of achievement” (Stableford, “Dystopia” 260). For example, Malthus justified the penury of England’s poor by drawing heavily on the speculative mode to warn his readers of *inevitable* and impending doom:

the vices of mankind . . . are active and able ministers of depopulation. They are the precursors in the great army of destruction; and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague, advance in terrific array, and sweep off their thousands and ten thousands. Should success be still incomplete, gigantic inevitable famine stalks in the rear, and with one mighty blow levels the population with the food of the world. (Malthus qtd. in Foster, *ME* 97)

Vice, disease, and famine keep population numbers in line “with the food of the world,” which implies a static understanding of agricultural capacities that not only naturalizes poverty as a “grinding law of necessity,” but justifies a lack of social and political will to address the causes and effects of poverty (Malthus qtd. in Foster, *ME* 97). Further justifying the ‘anti-utopian’ label, he believed that attempts to remedy these issues *would only exacerbate the problem*:

to interfere with it in any way, as in the case of the Poor Laws of England, was to court bigger disasters such as famine, and the lowering of the condition of the upper classes: “All cannot share alike in the bounties of nature,” he wrote. It thus “appeared that from the inevitable laws of our nature some human beings must suffer from want. These are the unhappy persons who, in the great lottery of life, have drawn a blank.” (Malthus qtd. in Foster, *ME* 97-98)

Malthus appeared to believe that neither social problems could be greatly improved through legislation, nor that human societies could manage population through moral restraint. In this sense, Malthus was far more resigned to conflict and suffering than those people who would focus on human population dynamics in relation to social, economic, political, and environmental problems in the postwar period.

Postwar Population Anxieties

In contrast to Malthus’ anti-utopian assumption that population dynamics inevitably generate crises for the poor, the postwar anti-population growth movement hoped to prevent the ills associated with overpopulation by framing the problem as human-caused and resolvable. As will become clearer over this chapter and the next, it is also important to note that there was (and continues to be) considerable disagreement about how to define ‘overpopulation’, what this

concept may conceal about socioeconomic structures and ecological degradation, and if human population growth is even an appropriate heuristic for thinking about socioecological problems. It is equally important to note, however, that postwar anxieties about overpopulation were at least somewhat understandable, since the world has never and will likely never again see anything like global population boom that occurred in the middle of the twentieth century.²¹ By 1930, an unprecedented march was well underway as “the human population had doubled to two billion. It took only another thirty years, until 1960, to add the third billion. Then the crescendo came. The fourth billion arrived in 1975 Between 1945 and 2015, some two-thirds of the population growth in the history of our species took place within one human lifetime” (McNeill and Engelke 41). There are two main forces that drove this massive spike and resulted in peaking global population growth rates in the postwar period. First, as mentioned above, rapidly expanding energy production enabled cheaper and more efficient agricultural practices, including the use of chemical pesticides and industrial-scale farming procedures, which led to more abundant food sources, while also contributing to advances in mobility, transportation, and the expansion of the commodity economy. McNeill and Engelke argue that energy was “at the heart of the new epoch. The quantities of energy in use after 1945 became so vast, they dwarfed all that went before. [. . .] Cheap energy gave people new leverage with which to accomplish things, move fast and far, make money, and, if inadvertently and often unknowingly, alter the environment” (McNeill and Engelke 39). The second driver of population growth in the twentieth century was massively expanded public health administrations and vaccination programs the world over, which, as discussed above, included the use of chemical pesticides in

²¹ According to the *World Population Prospects 2022* report prepared by the UN’s Department of Economic and Social Affairs Population Division, it is likely that global population will plateau if not decline by 2100, with one estimate suggesting that global population may decline as early as 2070 (27).

killing disease-carrying insects. Two global conflicts contributed to these developments, as “war’s exigencies had legitimated massive public health interventions and taught administrators and health professionals how to deliver vaccines, antibiotics, and sanitation to the masses at modest cost, even in difficult conditions” (McNeill and Engelke 41). Overall, these healthcare developments coupled with advances in agricultural practices to significantly narrow the gap in life expectancy between the global rich and the global poor (McNeill and Engelke 45). With this background in mind, it is clear that modern overpopulation anxieties emerge from the same socioecological and historical developments as the modern environmental movement. In this sense, too, it is clearer why both movements made extensive use of rhetorical strategies that are common to dystopian fiction, such as warning about the viability of the future if dramatic steps were not taken to minimize humankind’s growing ecological impacts.

Much like contemporaneous environmental concerns, population anxieties in the 1960s were expressed in terms of fears about the future, and often in the language of the future anterior.²² For example, former President Dwight Eisenhower (1953-1961) remarked that “‘population [is] the most critical of the problems facing man today’: ‘If we ignore now the plight of those unborn generations [who] [. . .], because of our unreadiness to take corrective action in controlling population growth will be denied any expectations beyond abject poverty and suffering, then history will rightly condemn us’” (Eisenhower qtd. in Smith 337). He is concerned that history, portrayed as *an anticipated product of the future’s reflection back on the present*, will “rightly condemn us” because it will (by then) have been too late to act. Time as it

²² By the time the 1950s ended, overpopulation anxieties were beginning to filter into mainstream American political and cultural consciousness, and commentators suggested that time was running out. CBS released a documentary in December 1959 titled “The Population Explosion”, which cautioned “that an unrestricted birthrate could lead to catastrophe, [which] made CBS the first national television network to air a program containing a frank discussion of contraception” (Smith 335).

is formulated here is not linear, but rather is dialectical as it is in dystopian fiction: what we do in the present compounds the meaning of our actions in the past, the meaning of which is not fixed until some future point when our present decisions have been borne out more fully. Another influential global leader who used the future anterior to warn the world of multiple potential intersecting crises was United Nations Secretary General U Thant, who cautioned in 1969:

Members of the United Nations have perhaps ten years left in which to subordinate their ancient quarrels and launch a global partnership to curb the arms race, to improve the human environment, to defuse the population explosion, and to supply the required momentum to development efforts. If such a global partnership is not forged within the next decade, then I very much fear that the problems I have mentioned *will have reached* such staggering proportions that they will be beyond our capacity to control. (U Thant qtd. in Meadows et al. 17, emphasis added)

Like Eisenhower, U Thant was concerned that if dramatic action was not taken immediately, then the opportunity to build a safe and prosperous future would collapse, ushering in a future “beyond our capacity to control” (U Thant qtd. in Meadows et al. 17). He warns that we must do all that we can to avoid this scenario *before it will have been too late to act*. This logic is at the core of fictional *and* nonfictional dystopian warnings.

Another way in which anti-population growth rhetoric resembled that of the postwar environmental movement was its reliance on metaphors drawn from the nuclear debates from the 1950s. Scientists, politicians, and activists warned people of a potentially uninhabitable future by drawing similarities between the ability of nuclear weapons to fundamentally alter the planet and humankind’s increasingly outsized impact on ecosystems. Just as chemical pesticides were described as powerful weapons in a war on non-human nature, rapidly accelerating human

population growth was referred to colloquially as *the population bomb*, which was first coined by Hugh Moore and later (at the insistence of his publishers) adopted by Ehrlich as the title of his 1968 best seller. Michael Smith further explains that it was commonplace “to write of the population bomb in atomic terms, referring to poverty and hunger as ‘the twin fall-outs of this bomb of humanity’” (Smith 336). Sources as wide-ranging as *The Nation*, *The Christian Century*, and even popular teen magazine *Senior Scholastic* adopted similar rhetoric to address what was widely believed to be humankind’s next existential threat: “‘It is possible,’ *Senior Scholastic* reads, ‘that there will never be a nuclear war. But the population of the world is exploding and right now’” (Smith 336). An article from *The Nation* titled “Danger: Megatonnage Unknown” makes use of similar rhetoric, stating that “‘slowly public opinion is awakening to the fact that the arms race is not the only threat to survival, that the population explosion, though less dramatic, could ultimately prove no less lethal than the multi-megaton bomb’” (Smith 336). Much like the modern environmental movement, the anti-population growth movement that emerged in the 1960s was shaped by nuclear fears, and from this perspective it is possible to see how the anti-population growth and the modern environmental movements co-evolved in response to decades of anxiety not only about what the future might look like future, but about the future survival of humankind as a species. Importantly, both movements used similar rhetorical strategies to warn people of impending crisis.

Overpopulation: Ecological Fears

While overpopulation fears during the 1960s and early 1970s were not always driven by environmental anxieties, the significance of which I will discuss shortly, ecological concerns were a major force within this movement largely to the credit of Ehrlich and other prominent

scientists who emphasized that population was only a contributing factor to the main problem facing the planet: widespread degradation of ecological systems. As Ehrlich reiterates throughout *The Population Bomb*, it does not make sense to discuss human population dynamics without accounting for how these populations live (i.e., how and what is produced and consumed).²³ For this reason, as I will show, he is remarkably clear that developed nations with high levels of consumption bear the greatest responsibility for the degradation of the planet, and that “the world can no longer afford to support and tolerate such inequities” (Ehrlich 25). He also warned that population-related food shortages were not likely to be the gravest threat to humankind in the future, but instead he speculated that “in the long view the progressive deterioration of our environment may cause more death and misery than the food-population gap. And it is just this factor, environmental deterioration, that is almost universally ignored by those most concerned with closing the food gap” (Ehrlich 26). Like Carson, he was concerned that the utopian promises made by proponents of chemical pesticides might result in a real-world ecological dystopia:

Efforts to increase production in the short term were eroding the world’s capacity to produce food in the long term. Soil erosion, which had destroyed whole civilizations in the past, would “accelerate as the food crisis intensifies.” Worse, “use of synthetic pesticides, already massive, will increase.” Pesticides were not only toxic but also “one of man’s potent tools for reducing the complexity of ecosystems.” (Ehrlich qtd. in

Robertson 142)

²³ While this might appear to be obvious, and that a nuanced appreciation of ecological degradation would likely have to account for both population numbers and production/consumption patterns, I can appreciate arguments that suggest there is little point in discussing population dynamics at all when I read statistics like the following provided by Oxfam (2020): “The richest one percent of the world’s population are responsible for more than twice as much carbon pollution as the 3.1 billion people who made up the poorest half of humanity during a critical 25-year period of unprecedented emissions growth” (Ratcliffe).

Unfortunately, he lamented, proponents of chemical pesticide usage for the purpose of expanding food production often failed to understand the science behind this goal (Ehrlich 26). I will discuss Ehrlich's environmental concerns regarding population and how they were framed in terms of the future at length in my reading of *The Population Bomb*, but it is worth noting that he was not alone in these concerns, as other scientists like Eugene Odum²⁴ echoed similar sentiments by warning that human beings are living "like parasites on the environment; humanity risked extinction by 'destroying its host'" (Odum qtd. in Sabin 27-28). Many politicians shared the environmental concerns of scientists and enacted major legislation and established governmental organizations in the late-1960s and early-1970s,²⁵ including the creation of the first Earth Day in 1970. Senator Gaylord Nelson (Wisconsin), "Earth Day's initiator and prime mover," was especially taken with Ehrlich's foreboding message, as he "announced that Americans no longer enjoyed an 'endless frontier.' The same month he called for an environmental teach-in, he cited a Paul Ehrlich article on the floor of the U.S. Senate: 'Man is not only running out of food, he is also destroying the life support systems of the Spaceship Earth'" (Nelson qtd. in Robertson 169). Importantly, however, not all fears about overpopulation were rooted in ecological concerns about destroying the planet's 'life support systems': a significant faction of overpopulation activists were concerned with maintaining Western standards of living and feared the inconveniences of growing urbanization. This caused a sense of uncertainty among environmental and anti-population growth activists not only about how to fix *the problem*, but about what *the problem* was. This uncertainty is reflected in the debates

²⁴ Notably, Odum was a vocal opponent of "the growing sense of human control and power over nature that led to extravagant technological schemes, such as a late 1950s Project Chariot proposal to use nuclear explosions to create a deep-water port in Alaska" (Sabin 27-28).

²⁵ Including, but not limited to, congress' signing of NEPA in 1969 and the formation of the NRDC in 1970. For a full list, see <https://environmentalhistory.org/20th-century/sixties-1960-1969/> and <https://environmentalhistory.org/20th-century/seventies-1970-79/>

about whether or not overpopulation was really the main cause of ecological degradation, which I explore in the following chapter in relation to dystopian fiction produced during this period.

Overpopulation Fears Beyond Ecology

While many anti-population growth activists would have considered their professional work and activism to be part of the burgeoning environmental movement that cautioned about the future habitability of our planet—and some, like Ehrlich, were central to both movements—other key figures in the anti-population growth movement displayed little if any concern about the environment. Robertson explains that ‘overpopulation’ was as an umbrella term for several postwar fears: the “population explosion was not just a demographic bomb but also a cultural, scientific, and political bomb. The mushrooming of concern grew as much from the alignment of potent international and domestic ingredients—ideas about poverty, war, racial difference, technology, sex, motherhood, and the role of the government—as from numbers on a chart” (Robertson 8). Notably absent from this list, environmental concerns sometimes took a backseat to human population growth anxieties related to the security of white middle-class activists’ own lifestyles, livelihoods, and standards of living. In many cases, population concerns were framed as environmental issues only through fears that growing populations would lead to poorer air quality, contaminated water, urban crowding, restricted diets (i.e., less meat), and similar changes in consumption habits in the West. This raised serious concerns inside and outside the movement about the supposed values associated with slowing human population growth.

Influential figures in the anti-population growth movement, including Hugh Moore,²⁶ warned that growing global population levels were a challenge to Euro-American hegemony and

²⁶ As Smith explains, Moore was a major figure in shaping the movement’s rhetorical emphasis on human population growth as a destructive force. Smith explains, “in 1954 a pamphlet published by the Hugh Moore Fund

quality of life in the postwar period.²⁷ Assuming that more people meant *more* poverty and *less* freedom, Moore warned that global population levels threatened the American way of life: “we are not primarily interested in the sociological or humanitarian aspects of birth control,’ he wrote to John Rockefeller III. ‘We are interested in the use which Communists make of hungry people in their drive to conquer the earth’” (Moore qtd. in Robertson 89). During his presidency, Lyndon B. Johnson (1963-1969) would reiterate these widespread anxieties, as he warned that “the vitality of the capitalist model . . . would founder amid poverty and famine” and that “no peace and no power is strong enough to stand for long against the restless discontent of millions of human beings who are without any hope” (Johnson qtd. in Sabin 24). For some, *these concerns were the top priority*, as Smith explains that “science, albeit disputed science, had established that humanity faced a very unpleasant future if current population trends persisted,” which meant that “nothing, not even the Cold War, threatened the maintenance of a high quality of life (only recently achieved by so many in the United States), as did the specter of overpopulation” (Smith 336).

By the mid-to-late 1960s, Moore’s new Manhattan Project,²⁸ whose name drew parallels between the challenge to build a nuclear bomb and the challenge of defusing the population bomb, was coopting mainstream environmental anxieties about the future as a means of

introduced a new phrase into the population crisis lexicon and a new image about the implications of overpopulation for the future: ‘The Population Bomb.’ It would be more than another decade before this term became common usage in overwrought prognostications about the future. But the idea that population was a potential explosive force stuck, consonant as it was with the rhetoric of the Cold War” (Smith 333-334).

²⁷ Moore frequently “used the bomb to dramatize the ‘deadly triangle’ of population growth, communism, and war. Indeed, he often claimed that population growth threatened to create an explosion ‘as dangerous as the explosion of the H bomb’” (Robertson 89).

²⁸ In 1965, Hugh Moore and Henry Draper “established the Population Crisis Committee to put pressure on Congress to allocate more money to USAID’s population program. Keeping with the theme of nuclear warfare initiated by his Population Bomb, Moore privately dubbed the Committee’s public relations strategy the “Manhattan Project,” though its official title was ‘Campaign to Check the Population Explosion’” (Merchant, *BPB* 158).

protecting the American way of life.²⁹ Appealing to a sense of American patriotism, a 1968 full-page advertisement in the *New York Times* offered a grisly image of what Moore believed to be the causal relationship between population growth, declining standards of morality, violence, and pollution. The ad portrayed

a young man preparing to stab an elderly man. The text informed readers that “city slums—jam-packed with juveniles, thousands of them idle—breed discontent, drug addiction and chaos. And crime in the cities is not the only problem. We have air and water pollution in wide areas. And the quality of life in this great country of ours is deteriorating before our eyes with the rapid increase of people.” Tying all of these issues to population, the ad concluded, “Is there an answer? Yes—birth control is one” (Merchant, *BPB* 172).

Here, the advertisement links crime with moral and environmental deterioration, suggesting that “this great country of ours is deteriorating before our eyes,” which links the traditional Malthusian fear of vice as an inevitable product of population growth with modern and increasingly popular anxieties about the environment. If it were not clear enough that such advertisements were not-so-subtle appeals to middle-class whites, and part and parcel of postwar American white flight, one need look no further than leaked internal memos from the new Manhattan Project, with one particularly appalling communication complaining that “this black population explosion is the cause of 99% of riots and crime. As long as our politicians condone multiple births to the illiterate and degenerate, our nation will suffer more and more before being destroyed from within, making it easy for the Russians and Red Chinese to take over” (Moore

²⁹ Other times they did not even feign interest in environmental concerns, instead warning of poverty head-on in “ads that directly attributed poverty to large families, including one that showed a couple with eight children and the headline claiming, ‘We spend over \$4 billion a year on welfare. Yet we spend only \$24 million a year to get to the cause of the problem’” (Merchant, *BPB* 172).

qtd. in Merchant, *BPB* 163). The memo makes clear that, at least for Moore and some of his associates at the new Manhattan Project, the main fears regarding overpopulation are racial and geopolitical rather than environmental. Moore, however, was not alone in strategically couching economic and geopolitical concerns in environmental rhetoric.

Like the new Manhattan Project, Zero Population Growth (ZPG), which was closely associated with Ehrlich who was its co-founder and president, displayed conflicting messages about the purpose of limiting population growth.³⁰ While Ehrlich himself was primarily concerned with what he perceived to be the *ecological costs of growing populations* around the world, and in particular in nations like the United States with the highest levels of per capita consumption, other influential figures in ZPG appeared to be more concerned with urban crime rates and crowding, international conflicts like Vietnam, and how growing population numbers would result in a declining quality of life for Americans because it would require a reduction in consumption per capita. Like Moore and President Johnson, ZPG's co-founder Richard Bowers believed that limiting population growth *globally* was necessary in order to continue to raise standards of living in the West. By the end of the 1960s, roughly half of Americans were concerned with population growth and feared that it might affect their own standards of living in the future³¹—a sentiment Bowers expressed in a public statement that demonstrates how environmental rhetoric was used to justify exorbitant levels of consumption for a minority of Earth's population. In 1970, Bowers stated that

³⁰ For ZPG, population limitation “meant to secure a birth rate of 2.2 to achieve a desired replacement rate of 1:1 and to thereby realize the dream of a numerically stable population—zero population growth” (Höhler 100).

³¹ In 1969, a “Gallup poll found that 54% of respondents believed U.S. population growth to be a serious problem and 44% believed that maintaining current living standards would eventually require population control” (Merchant, *BPB* 170).

the U.S. population, then numbering just over 203 million, must be reduced to 100 million because the world's natural resources were "not adequate to provide such items as a 9 room house (not to speak of a wilderness mountain retreat or a quest cottage by the sea), two cars, quality heating systems, a wide variety diet, elaborate wardrobe, etc. etc. which have been and are the hallmark of the successful person." (Bowers qtd. in Merchant, *BPB* 170-171)

"Far from critiquing such aspirations," Merchant adds, "Bowers called for the government to limit population growth in order to avoid the imposition of conservation measures that would prevent his attainment of these 'hallmark[s] of the successful person'" (Bowers qtd. in Merchant, *BPB* 171). Merchant rightly argues that this calls into question ZPG's environmental credentials, because "although ZPG portrayed itself as an advocate for the environment, its ultimate aim was to eliminate the need for conservation measures, which ZPG literature described as reducing personal freedoms" (Merchant, *BPB* 170). So, while plenty of scientists, politicians, and environmental activists like Ehrlich had fears about the future because they believed that there were too many people consuming too much of the world's resources in ecologically-disastrous ways (e.g., the use of chemical pesticides to maintain increasing food demands), there was also an influential faction of the anti-population growth movement that demonstrated little if any concern with the non-human environment beyond its ability to be mobilized as a politically-salient issue or to be turned into commodities for consumers. Contemporaries such as Andre Gorz,³² among others, recognized that attempts to control population growth in the 'developing

³² In *Politics as Ecology* (1980), collected essays written between 1974-1980, Gorz explains this tension: "when the 'First World' . . . sounds the alarm and calls for population control, the first reaction on the part of the Third World is irritation or rebellion. This oughtn't to be surprising. For with only 13% of the world population, the industrialized capitalist countries consume 87% of the world's energy. . . . It is said that the hydrosphere and the atmosphere will be poisoned by the wastes of the 8, 12, 16 billion people of the next century; but the 500 million inhabitants of western Europe and North America currently cause the environment as much damage as 10 billion Indians would (if

world' were often self-serving on the part of Western nations whose citizens consumed natural resources at an alarming rate. And, as I discuss in the next chapter, authors of dystopian fiction like Harry Harrison, John Brunner, and Ursula Le Guin acknowledge that much of the anti-population growth discourse functioned to maintain status quo standards of living in the West.

Population ... Hopes?

While the debates about population growth did not generate as many hopeful images as nuclear technologies or chemical pesticides, there was nonetheless substantial hopeful rhetoric about how the earth would be able to support growing numbers and avert famine through developments associated with the Green Revolution. As I have previously noted, the faith in technological improvements in pesticides and food production via the Green Revolution is one major point of intersection between the modern environmental and anti-population growth movements. Much of the hopeful rhetoric regarding growing global populations was that with the increased use of chemical pesticides, and with newer and better strains of seeds, the earth might prove abundant enough to supply food for a growing population indefinitely. Moreover, regardless of one's political leanings, there were and still are legitimate reasons to celebrate the causes, if not the effects, of growing global population rates during the postwar period: decreased infant and maternal mortality, the expansion of sanitation and vaccination regimes all over the world, advancements in agriculture and, perhaps equally important, what was avoided: nuclear confrontation and a third global conflict.

Within the techno-utopian camp, however, there was a somewhat surprising but nevertheless real sense that growing populations were a cause for celebration. Chronicling the

they existed). Hence the suspicion that when we ask the Third World for population control it may simply be so that we can continue to pillage the planet" (Gorz 96).

population debates, Mark Lytle remarks that Julian Simon, Ehrlich's contemporary and frequent sparring partner, "decided that population growth was not the problem, but the solution. A growing number of economists, Simon among them, now believed that, contrary to Ehrlich and the doomsayers, the burdens that humans placed on natural resources through use and abuse was just one side of the equation" (Lytle 362). According to these optimists, "as population increased, so too did human capital and technological innovation" (Lytle 362). Simon was convinced that "more people meant more ideas, new technologies, and better solutions. Rather than sparking the world's crises, population growth would help resolve them. People, as Simon titled his landmark 1981 tome, were *The Ultimate Resource*" (Sabin 4). Frederick Buell has reiterated this point, remarking that Simon was an important figure from the 1970s onward in moving beyond so-called "environmental apocalypse":

Simon argued first that population growth was not bad, but good for us, because it increased the quantity of human geniuses alive[.] . . . Simon thus did not just try to pooh-pooh crisis; he also welcomed it. He changed environmental apocalypse from an end into a beginning, from a cause of accelerating decay into a dynamical principle of (literally, he maintained) unlimited growth. (F. Buell, *Apocalypse* 21-22)

This argument was, and remains today, fundamentally opposed to the idea that there are hard ecological limits to the earth's productive capacities, which finds its clearest expression in various forms of Ecomodernism.³³

³³ While surprising given the ongoing climate emergency, this argument has retained currency in recent years and is defended by ecomodernists in the *Ecomodernist Manifesto* (2015) who believe that, "to the degree to which there are fixed physical boundaries to human consumption, they are so theoretical as to be functionally irrelevant" (Asafu-Adjaye et al. 10).

3. Critical Contexts: Real-World Environmental Dystopias

The modern environmental and anti-population growth movements responded to widespread feelings of crisis in the immediate postwar decades, and these movements themselves were inspired and shaped by the writings of Carson and Ehrlich. While Carson's *Silent Spring* (1962) and Ehrlich's *The Population Bomb* (1968) have been variously celebrated and derided by ecocritics for their evocation of apocalypse, in the remainder of this chapter I argue that these texts contribute to the postwar history of rich exchange between environmental thinking and dystopianism that I have tracked throughout this dissertation. I argue that we can read *Silent Spring* (1962) and *The Population Bomb* (1968) as scientific and literary texts within the dystopian tradition that adopt formal and rhetorical strategies common to dystopian fiction to warn their readers of the real-world dystopias that they fear are emerging. Far from one-dimensional texts about chemical pesticides or overpopulation, these texts establish "a dystopian structure of feeling" by demonstrating that the threats plaguing the environment are *socioecological* in nature, rather than purely matters of human or 'environmental' wellbeing. Contrary to arguments that these texts are apocalyptic and afford little room for hope, I argue that these texts balance fear with measured hope for the future. The hope that they offer *within the text* is central to my second argument about these books: as dystopian texts, they appear to anticipate the critical turn in dystopian fiction in subsequent decades.

It is worthwhile to examine how the "two cultures" of science and literature converge in the dystopian form during the revolutionary decade of the 1960s not only because "we are now living in a science fiction novel that we are all writing together," but because "to understand environmental crisis . . . we need to understand its historical emergence at the intersection of politics, fiction, and science" (Killingsworth and Palmer, "SF" 175; Canavan and Robinson 255;

Garforth, “EF” 241). While, in the past few decades, critics have theorized the historical and rhetorical links between real and fictional representations of environmental crisis, Carson and Ehrlich consciously reflected on these links in their own work. In an acceptance speech for the National Book Award in Nonfiction for *The Sea Around Us* (1951), Carson reflected that “the aim of science is to discover and illuminate truth. And that, I take it, is the aim of literature, whether biography or history or fiction; it seems to me, then, that [there] can be no separate literature of science” (Carson qtd. in Killingsworth and Palmer, “SF” 174). Also acknowledging these links, Ehrlich implored people within the arts to use their talents to shape public perceptions of environmental crisis, appealing for “novels or plays emphasizing near-future worlds in which famines or plagues are changing the very nature of mankind and his [*sic*] societies” (Ehrlich 175). The overlap between the concerns of fiction authors and scientist-activists no doubt stems from the general sense of environmental crisis that pervaded the 1960s and early 1970s, which Sabine Höhler argues resulted in a sort of hybrid discourse of science and fiction where “the perceived ‘population problem’ was neither about science nor about fiction only. Both ecological science and ecological fiction invented truisms about too many people sharing too little space and about how overpopulation would soon destroy what remained of planet Earth” (Höhler 101).

Critics who have examined the fictional elements of *Silent Spring* and *The Population Bomb* have tended to do so largely through the discourse of apocalypticism, rather than dystopianism, which is a problem for two reasons. First, apocalypse is often considered to be eschatological, as its religious connotations suggest, which makes it problematically ahistorical. In dialogue with Frank Kermode’s writings on apocalypse, Rebecca Evans³⁴ explains that for

³⁴ Evans does not disavow ‘apocalypse,’ but rather takes issue with how it has been theorized by critics and how this has affected interpretations of texts with apocalyptic elements. She argues that “environmental SF” can “narrate a

many readers apocalypse “can be understood not just as the end of history but as the end of historicity. Eschatological narratives are founded in a sense of preordained fate[.] . . . Apocalypse thus leaves little room for historical intervention, contingency, or consciousness” (Evans 504). This is the antithesis of the purpose of environmental and dystopian writing, as it leaves little room for understanding what the causes of the ‘apocalypse’ are and how we can avoid it. Without providing a clear sense for how the climate emergency is historical, anthropogenically caused (rather than ‘preordained’), and in some way still preventable (if only preventing the worst), apocalypticism seems to invite uncomfortable analogies to climate denialism and/or the charge that “the belief in apocalypse is every generation’s narcissistic exceptionalism” (Evans 504). In an essay where he examines the efficacy of apocalyptic rhetoric, Greg Garrard echoes this problem by tracing the historical roots of apocalypticism to roughly 1200 BCE without posing the politically uncomfortable question about whether or not religious and spiritual texts stand on equal footing with research-backed environmental science texts where speculation about our collective ecological future is concerned (they don’t).³⁵ The expectation of apocalypse provides ammunition to climate denialists when it neither arrives on time, nor as spectacularly as expected. For example, the incremental devastation of global warming is hard to capture in a single moment or image, unlike previous visions of instantaneous ‘apocalypse’ that were associated with nuclear annihilation. In other words, we need a more

permeable apocalypse, an open apocalypse, one that threatens, but does not resolve neatly in a cathartic finality” (Evans 502-503).

³⁵ Garrard writes, “for at least 3,000 years, a fluctuating proportion of the world’s population has believed that the end of the world is imminent. Scholars dispute its origins, but it seems likely that the distinctive construction of apocalyptic narratives that inflects much environmentalism today began around 1200 BCE, in the thought of the Iranian prophet Zoroaster, or Zarathustra. Notions of the world’s gradual decline were widespread in ancient civilisations, but Zoroaster bequeathed to Jewish, Christian and later secular models of history a sense of urgency about the demise of the world. . . . Yet arguably very similar rhetorical strategies have provided the green movement with some of its most striking successes. With this in mind, it is crucial that we consider the past and future role of the apocalyptic narrative in environmental and radical ecological discourse” (Garrard 93-94).

nuanced understanding of what ‘apocalypse’ or climate catastrophe looks like, or we might miss it. Andrew McMurry has helpfully pointed this out by remarking that “by holding out for that noisy demise, we can pretend we haven’t been expiring by inches for decades” (McMurry qtd. in Wallace, *Risk* 17). In part, as I will show in my readings of Carson and Ehrlich, the charges of ‘doomster-ism’ have stuck because their texts have been read as *apocalyptic*—as foreboding an inevitable and catastrophic end—rather than as speculative warnings that contain what Mathias Thaler refers to as dystopia’s extrapolative “cautionary pedagogy” (Thaler 91).

Related to the issue that apocalyptic rhetoric can appear to leave “little room for historical intervention, contingency, or consciousness” (Evans 504), the second problem that critics have identified with apocalyptic rhetoric is that it can be enervating. For Garrard, it only “makes sense to represent meaningful intervention as difficult, but not impossible. Only if we imagine that the planet has a future, after all, are we likely to take responsibility for it” (Garrard 116). While proponents and practitioners of apocalyptic rhetoric claim that it is “not about anticipating the end of the world, but about attempting to avert it by persuasive means,” Garrard remains unconvinced, warning that images of the end of the world are “strategic hyperbole [that] might be justified in the interests of successful persuasion, but the long-term dangers this approach poses for environmentalist causes may outweigh its rhetorical usefulness” (Garrard 107-108). The doom and gloom of apocalyptic rhetoric, which is language that denialists have long painted environmentalists with, apparently crushes people into feeling incapable of acting. With no hope in sight, “the anticipated apocalyptic ‘resolution’ renders human action useless: if a (disastrous) ending is figured as inevitable, individuals will be either too discouraged or too convinced of their own inefficacy to intervene” (Evans 504). Even Gerry Canavan’s more generous reading of apocalypse—“perhaps the true fantasy of apocalypse then is not so much that we will be

destroyed but that something might intervene in time to force us to change” (Canavan, “Intro” 13)—suggests that apocalypse’s ultimate “fantasy” is for an external force to swoop in and save us from ourselves.

Fortunately, I argue, it is possible to account for the use of apocalyptic imagery and spectacular warnings in these texts without reducing them to these features alone: I propose that we understand these texts as participants in the broader postwar dystopian turn, not only because of critics’ apprehensions about apocalypticism as a rhetorical mode, but because these texts exemplify the formal and rhetorical strategies of dystopianism in their depiction of socioecological issues and undesirable futures. Just as the literary utopia has expanded in the centuries since the publication of its namesake to become a term that has literary, philosophical, and political meanings, dystopianism can be a useful cultural heuristic outside of a strictly fictional context. Levitas, for example, has remarked that “dystopias are not necessarily fictional in form; neither predictions of the nuclear winter nor fears of the consequences of the destruction of the rain forests, the holes in the ozone layer, the greenhouse effect and the potential melting of the polar ice caps are primarily the material of fiction” (Levitas 225-226). Krøijer, too, has recently (2020) argued that dystopianism has been largely ignored in the social sciences and humanities outside of literary criticism (Krøijer 63). Beyond its fictional form, dystopianism can play an important role as a “political technology” in mobilizing social change by intervening between the present reality and our necessarily speculative visions of the future (Krøijer 63). Dystopianism, in this sense, encapsulates real-world “potent political argument[s]” *and* fictional “cautionary stories,” both of which engage with visions of the future by “magnifying or extrapolating from current conditions, occurrences, or trends” (Krøijer 51). Unlike the drawbacks of apocalypse as arguably enervating and eschatological, dystopia foregrounds the relationship

between the past, present, and future and conveys to the reader that action is not only possible, but necessary. It is in this way that the fictional and nonfictional elements of Carson's and Ehrlich's texts mobilize the dystopian mode and exemplify how "dystopias can take the form of undesired future scenarios or as undesired places in the present world" (Krøijer 62).

Carson's and Ehrlich's texts blend dystopian fictional techniques with real-life ecological anxieties to produce a dystopian affect, or to adopt Moylan's compelling turn of phrase, a "dystopian structure of feeling" (Moylan, *Horizons* 150). At its core, dystopianism critically evaluates the present by evoking images of undesirable futures where social and ecological problems are interconnected, which Moylan suggests is "dystopia's foremost truth[:] . . . its ability to reflect upon the causes of social and ecological evil as systemic" (Moylan, *Scraps* XII). As I will explain, Carson's and Ehrlich's texts adopt several formal techniques that are associated with dystopian fiction, including but not limited to, extrapolation, metaempiricism, and the future anterior, while their "ability to reflect upon the causes of social and ecological evil as systemic" rivals even the best novels in the genre (Moylan, *Scraps* XII). These texts also anticipate the critical turn in dystopian fiction, which I will briefly identify here before moving on to my close readings of these texts.

Affixing the word *critical* to dystopia signifies a self-reflective literary evolution within the genre,³⁶ and the main feature that distinguishes critical from traditional dystopias is the degree to which hope is present *within* the text, rather than as an absent element that is merely implied through a desire to negate the undesirable elements the text presents (Baccolini 520). In

³⁶ Lyman Tower Sargent coined the term *critical dystopia*, claiming that some texts "are clearly both eutopias and dystopias" and thus "undermine all neat classification schemes" (Sargent qtd. in Baccolini and Moylan 3). According to Baccolini and Moylan, the critical dystopia emerges because of the cooptation of utopia by liberal developmentalism, as any remaining "utopian tendency came to an abrupt end. In the face of economic restructuring, right-wing politics, and a cultural milieu informed by an intensifying fundamentalism and commodification, sf writers revived and reformulated the dystopian genre" (Baccolini and Moylan 3). When it seemed impossible to maintain the utopian impulse, in other words, it was kept alive within the pages of dystopia.

this sense, the traditional dystopia gestures “by negative example . . . in the direction of utopia: whatever else you do, don’t do this” (Canavan, “Preface” XI). Traditionally, dystopias like George Orwell’s *Nineteen Eighty-Four* (1949), Kurt Vonnegut’s *Player Piano* (1952), or Ray Bradbury’s *Fahrenheit 451* (1953) contain a degree of narrative closure that is arguably quite pessimistic, such as Winston Smith’s utter capitulation to Big Brother (*Nineteen Eighty-Four*), Paul Proteus and Ed Finnerty’s failed revolution (*Player Piano*), or the nuclear event that decimates Bradbury’s unspecified city (*Fahrenheit 451*). Raffaella Baccolini argues that utopian hope “is maintained in dystopia, traditionally a bleak, depressing genre with no space for hope in the story, only outside the story: only by considering dystopia as a warning can we as readers hope to escape such a dark future” (Baccolini 520). In contrast, critical dystopias, “by resisting closure, allow readers and protagonists to hope: the ambiguous, open endings maintain the utopian impulse within the work” (Baccolini 520). Baccolini explains that by “rejecting the traditional subjugation of the individual at the end of the novel, the critical dystopia opens a space of contestation and opposition for those groups—women and other ex-centric subjects whose subject position is not contemplated by hegemonic discourse—for whom subject status has yet to be attained” (Baccolini 520). Exemplary texts like Octavia Butler’s *Parable of the Sower* (1993) and Margaret Atwood’s *The Year of the Flood* (2009) build on the work of the traditional dystopia, yet in place of closure at the novel’s conclusion, these critical dystopias are instead marked by ambiguous endings and “contain at ‘at least one eutopian enclave or holds out hope that the dystopia can be overcome and replaced with a eutopia’” (Sargent qtd. in Baccolini and Moylan 7). Importantly, these texts also critique hegemonic positions and structures (such as masculinity, whiteness, capitalism) and make room for contesting groups.³⁷

³⁷ Raffaella Baccolini has also pointed towards genre-blurring and intertextuality as typical of the critical dystopia. See her essay “The Persistence of Hope in Dystopian Science Fiction” (2004) and her book chapter “Gender and

While Carson's and Ehrlich's texts operated within a broader cultural and environmental milieu that was accustomed to apocalyptic rhetoric because of the nuclear debates from previous decades, they nonetheless held out hope for alternatives to the real-world dystopias they envisioned. By reading *Silent Spring* and *The Population Bomb* as critical dystopias, my close readings heed Garforth's warning that "accounts of the period that dwell only on imagined futures of collapse, pessimism, and dystopia miss the element of warning and critique in dystopian science fiction and the utopian speculation that was also part of the idea of environmental crisis" (Garforth, "EF" 247). As Garforth explains elsewhere, while environmentalism since the 1960s "has warned about the dire consequences of abusing and exploiting the planet's natural resources, imagining future wastelands of ecological depletion and social chaos," it is no less important to remember that "it has also generated rich new ideas about how humans might live better with nature" (Garforth, *Hope* 2). Carson and Ehrlich are remembered for their dire warnings of ecological collapse, yet as I will show, *Silent Spring* and *The Population Bomb* provide readers with plenty of reasons to believe that the situation can be improved and that action is not futile. These texts retain the hope within their pages that there are routes out of the crises they identify.

4. Rachel Carson's *Silent Spring* (1962)

Much of the future-oriented posture of environmentalism since the early 1960s has been influenced by Carson's *Silent Spring*, and her book successfully combined scientific research and speculative literary techniques to "[touch] off a national debate on the use of chemical pesticides, the responsibility of science, and the limits of technological progress" (Lear X). "In a tribe

Genre in the Feminist Critical Dystopias of Katherine Burdekin, Margaret Atwood, and Octavia Butler" in *Future Females, The Next Generation* (2000).

notorious for disputation and disagreement,” environmental historian Ramachandra Guha writes, “there is a surprising unanimity on what begat modern environmentalism”: Rachel Carson’s 1962 best seller *Silent Spring* (Guha 69).³⁸ *Silent Spring* influenced politicians, policy and lawmakers, and the public in arguably unprecedented ways, as Guha explains, that “not since the appearance of John Maynard Keynes’ *General Theory for Employment, Interest and Money*—which was published in England in 1937—did a single book have such a dramatic and simultaneous impact on public opinion, scientific research, and state policy” (Guha 72). Carson’s *Silent Spring* is central to the braided history of environmentalism and dystopian fiction that I am building in this dissertation not only because of her popularization of ecological crisis and adoption of “apocalyptic rhetorics,” but because of her commitment to imagining alternative possibilities to the “chemical dystopia” she portrays with remarkable scientific rigour and literary skill (Garforth, “EF” 245; Wills 93). While critics have tended to comment on the rhetorical strength of the fable that opens the text, I argue that the totality of *Silent Spring* conveys “a dystopian structure of feeling” that anticipates the critical dystopian impulse to infuse fear with hope (Moylan, *Horizons* 150). She achieves this by constructing two potential futures within the fable: one in which human beings and non-human nature are inundated by chemical poisons not of their own choosing, and one where humans are able to live in a symbiotic and reciprocal relationship with non-human nature. The remainder of *Silent Spring* constructs an image for the reader of an incipient real-world dystopia that, if extrapolated into the future, will result in immeasurable loss of human and non-human life. However, Carson not only refuses the naive

³⁸ In the afterword to the 50th anniversary edition to *Silent Spring*, E.O. Wilson notes that, “in the decades that followed, the book’s message was blended with other scientific and literary efforts and folded into the growing activist movement, which was drawn from multiple social and political agendas. But whatever the genealogy, no one can deny that Rachel Carson’s book exerted, and continues to exert, a major influence. In immediate impact, it accelerated the resistance to chemical pollution that is all but universal today” (361).

utopia proposed by advocates of chemical pesticides, but she also refuses the false dichotomy in which the only alternatives are poisoning by chemicals or, as one contemporary critic dramatically put it, “an invasion of mosquitoes, cattle grubs, boll weevils, other insects, and a plague of grasshoppers [and] terrorised farms” (Wills 108). Instead, Carson proposes that humans might manage non-human nature by using ecocentric scientific methods that are based on cooperation and cohabitation, rather than anthropocentric and instrumentalist methods “in which death literally rain[s] from the skies” (F. Buell *Apocalypse* 165).

Criticism

While there is no doubt that Carson’s trailblazing *Silent Spring* contributed to the emergence of the modern environmental movement, there is disagreement about the purpose and efficacy of the text’s apocalyptic rhetoric: some critics are wary of the text’s reliance on ominous speculation, while others claim that Carson’s opening fable has distracted readers and critics, resulting in selective readings that omit important elements of the text. The main concern for critics who are skeptical of the viability of influencing genuine social change through the use of apocalyptic rhetoric is that crisis is framed as “pervasive” and “irreversible” to the reader (Garrard 104). While Carson is right to emphasize that environmental crisis is pervasive, critics like Frederick Buell argue that too much emphasis on this fact is strategically limiting. There seemed little reason for hope when reading *Silent Spring*, he writes, because it effectively showed that “too much environmental damage was done for easy or even moderately painless return; further, as environmental crisis was understood more and more as a problem deriving from the overall social system, the range of possible solutions to crisis shrank dramatically” (F. Buell, *Apocalypse* 168). Part of the problem, for Buell, is that *Silent Spring* so compellingly

depicted the pervasiveness of chemical poisoning that it failed to identify a specific cause of the problem: “awful as Carson’s depiction of the poisoning of ecosystems and people was, . . . it did not present the crisis as embedded systematically in our social structures” (F. Buell, *Apocalypse* 167). Instead, it presented crisis as “the result of a bad choice between two available mind-sets—between working with nature by thinking and acting ecologically and attempting to conquer and dominate nature” (F. Buell, *Apocalypse* 167).

Contradicting Buell, other critics have celebrated Carson’s ability to situate the text within the context of postwar politics and economic structures and suggest that her text must be read from a more holistic perspective. Carson’s popular and radical appeal, which is all the more impressive given the difficult task of conveying to a mass audience highly technical issues like chemical contamination and biomagnification, furnished the environmental movement with a guiding ethos that would bring together hitherto siloed groups: “never before had so diverse a body of people, from bird watchers, to wildlife managers and public health professionals, to suburban homeowners, been joined together to deal with a [common] threat” (Guha 72). For Foster, the strength of her writing was drawn *precisely from her ability to link ecological degradation with existing social structures*, including the clarity with which she identified how a lack of regulations on the production of chemical pesticides was related to postwar consumer capitalism. He credits “Carson, above all, [for] introduc[ing] the broad public of her day to the concept of ecology as a new basis for the critique of industrial capitalism” because of *Silent Spring*’s “willingness to confront the system in the form of sharp attacks on industry and capitalism itself[.] . . . Carson was explicit, condemning ‘the gods of profit and production’ in an era dominated by industry in which the right to make a dollar at whatever cost [was] seldom challenged” (Foster, *Nature* 512).

While critics like Jimmie Killingsworth, Jacqueline Palmer, and John Wills have defended Carson's use of apocalyptic and/or dystopian rhetoric in the fable, there is also a clear tension in these readings between their admonishing other critics for neglecting to appreciate the extent to which literary elements pervade the book and their own lack of acknowledgement of the text's hopeful core. Part of the problem for these critics, as I previously suggested, is that they believe Carson's literary strategy was *too* effective. Questioning her choice to offer such a compelling fable in the book's opening chapter, Killingsworth and Palmer argue that "not only did Carson attract more attention and create more alarm than she could have imagined; she also selected a rhetorical structure that condemned many of her best and most positive points to relative neglect" (Killingsworth and Palmer, "SF" 183). As a result, they argue, "readers of *Silent Spring* . . . have too often failed to respond sensitively to the totality of the vision it presents" (Killingsworth and Palmer, "SF" 182). Even eminent critics like Lawrence Buell, they argue, have failed to account for the totality of the text's narrative arc by assuming that the text's literary elements are limited only to the fable:

Contrary to Buell's remark about the omissions of narrative elements, in fact, beyond the opening chapter . . . a fairly definite plot and cast of characters, both heroes and villains, emerge. Buell may have overlooked these narrative features because, like many readers of *Silent Spring*, he focuses too closely upon the opening chapter in interpreting the book as a whole. (Killingsworth and Palmer, "SF" 185)

Trying to recuperate a sense for the text's narrative arc, they argue instead that "*Silent Spring* as a whole has a narrative thrust. Moreover, within every chapter, numerous stories unfold to fill out and extend the general outline of the myth developed in 'A Fable'" (Killingsworth and Palmer, "SF" 176). Unfortunately, however, they too miss the hopeful elements that are spread

throughout the book, as they claim that Carson's "first steps along the path of what would two decades later become known as the paradigm of sustainability . . . leave their mark too faintly in the overall narrative structure of *Silent Spring*" (Killingsworth and Palmer, "SF" 185). As I will show, they are incorrect to assume that more hopeful alternatives to chemical dystopia appear "too late in the book and without the added power of having been forecasted by her opening 'Fable'" (Killingsworth and Palmer, "SF" 185).

My reading suggests that not only are hopeful alternatives to chemical dystopia scattered throughout the text, *but they are forecasted in the fable*, as the fable can be understood as a framing device for the two roads (a metaphor used throughout the text) that might be followed. Wills, who unlike other critics refers to Carson's text as a dystopia ("chemical dystopia"), similarly acknowledges the fable as a warning, yet he also fails to account for the hopeful elements throughout the text. His otherwise insightful historical background and discussion of the text is limited by the one-dimensional sense in which he seems convinced "the real power of the book rested in the first few paragraphs. [. . .] The fable showed what would happen if readers ignored Carson's warnings: the rest of the book provided the evidence and detailed argument, and expanded on the threat of 'biocide'" (Wills 88).

Dystopia: A Fable for Tomorrow

While Killingsworth and Palmer argue that though the fable "succeeded mightily in drawing the attention of a broad audience, but as a prologue or an overture, it failed to convey adequately the multiple thematic directions of the book" (Killingsworth and Palmer, "SF" 189), I argue the opposite: the fable primes the reader for the real-world dystopia Carson explores in the following chapters. In the process, she also provides a sketch of what an ecologically sustainable

future might require and look like. The fable, which I argue embodies the critical dystopia because it balances hope and fear, serves the essential function of providing the reader with a figurative road map for the remainder of the book, yet this roadmap navigates the conditional space of a dystopian future and its hopeful alternative (Killingsworth and Palmer, “SF” 189). The fable employs several dystopian techniques to express the real-world socioecological concerns that animated the environmental discourse of the 1960s that I have discussed, yet it also contains traces of what a more symbiotic relationship between humans and non-human nature may look like. Carson’s contemporary America dwells in between these two future scenarios, which I argue shapes the trajectory of the text.

The first words of *Silent Spring*, often remarked upon for their evocation of the literary fable, can be thought of as a synecdoche for the goal of environmentalism as a radical movement: “There was once a town in the heart of America where all life seemed to live in harmony with its surroundings” (Carson 1).³⁹ Staging the chemical dystopia that follows as a “subverted fairytale,” as Wills refers to it, suggests that “Carson realised that the best way to implant the notion of impending dystopia was to offer an original Utopia, something to lose” (Wills 86). Though I agree with Wills, I suggest that Carson was not offering a utopia—an unattainable ‘no-place’—but rather a much more *real* goal towards which modern science, activism, and informed political decision-making might strive: humans living in healthy and symbiotic relationships with non-human nature. Rather than an idealized state of grace from which humans have fallen, this image at the book’s outset presents symbiosis with non-human nature as the goal of ecological thinking. Carson cleverly subverts the utopia promised by the

³⁹ Given the American context in which she was writing, it is important to acknowledge here that such harmonious American towns were the product of settler colonialism and dispossession, as the text uncritically acknowledges on the next page: “So it had been from the days many years ago when the first settlers raised their houses, sank their wells, and built their barns” (Carson 2).

chemical pesticides industry by presenting a healthy and safe town *at the beginning of the fable* that is destroyed by the same chemicals that are supposedly necessary for a healthy and safe future. In other words, the fable depicts the ironic tension between the (utopian) promises of chemical pesticides and what they actually produce (a chemical dystopia) by describing a thriving town—terms like “harmony,” “prosperous,” “bloom,” “delighted,” “beauty,” “abundance,” and “variety” are noteworthy—that is stripped of its positive qualities by “a white granular powder” Carson 1-2, 3). Yet, for Carson, it is not the case that the most desirable alternative to chemical pesticides is no scientific management of non-human nature at all. Rather than oppose science *in toto* and place her faith in an uncritical and anti-modern nostalgia, the whole of *Silent Spring* instead explores the merits and potential of various forms of biological management, including genetically modifying plants, using bacteria and fungi to control population levels of plants and insects, and intervening in the reproductive cycles of invasive species and other so-called pests. By distancing her vision of a hopeful and ecologically harmonious future from the false utopianism of the chemical pesticides industry, the book’s opening chapter offers both a snapshot of dystopia and a more hopeful alternative.

In constructing the dystopian side of the fable, Carson employs the techniques of metaempiricism and extrapolation, which critics like Claeys and Thaler have argued are essential to dystopia’s “cautionary pedagogy” (Claeys, *DANH* 290; Thaler 91). This also contributes to the fable’s function as an introduction to *Silent Spring* because it establishes connections between the speculative warning and the real-world dystopian conditions she elaborates in the remainder of the book. Carson’s ability to draw connections between the fictional fable town and real towns in contemporary America is important for two reasons: it demonstrates the porousness of the boundaries between fictional representations of undesirable futures and science-based

speculative non-fiction that critics such as Garforth, Höhler, and Canavan have identified; it also shows that Carson is consciously extrapolating from a *familiar* present to a terrifying reality, which is a necessary condition for dystopian thinking: “dystopia’s cautionary pedagogy can only gain traction insofar as its dark vision of the future is recognizable as an extension of lived experiences here and now” (Thaler 91). This strategy is evident in her addressing the reader at the fable’s conclusion: “*what has already silenced* the voices of spring in countless towns in America? This book is an attempt to explain” (Carson 3, emphasis added). By warning that the undesirable future she hopes to avoid is already emerging “in countless towns in America,” her fable establishes a fidelity to reality that allows the text to both *estrangle* the reader while grounding this terrifying future in the *actual conditions of the present*.

The fable’s rhetorical power depends upon Carson’s ability to portray the town metaempirically: as a possible reality that is not yet a reality. Metaempiricism can be understood as the use of the literary technique of estrangement to propose an alternative to the present that is grounded in the historical conditions of the present. In this sense, metaempiricism is essential to *all* science fiction. While Darko Suvin elaborates on this concept in the context of utopianism, his explanation here remains true for dystopianism: an understanding of a utopian text as “historical alternative” is essential to “any definition which would leave utopia intact as a literary genre and object of exploration” (Suvin 42-43). Here, *meta* implies a potentially real situation that *could* emerge from the historical conditions of the present, such as when Carson warns that “this town does not actually exist, but it might easily have a thousand counterparts in America or elsewhere in the world” (Carson 3). Moreover, for a speculative text to be *metaempirical*, the narrative must not only be drawn from the historical conditions of the present, but the text must also maintain a fidelity to empirical reality. In other words, the narrative cannot be foreordained

or constrained by supernatural or metaphysical forces, such as the epic, fantasy, or cockayne: metaempirical fiction is “not a priori intentionally oriented toward its protagonists, either positively or negatively; the protagonists may succeed or fail in their objectives” (Suvin 11). Carson identifies the cause of the blight in the fable in terms that cohere with this principle by explaining that “no witchcraft, no enemy action had silenced the rebirth of new life in this stricken world. The people had done it themselves” (Carson 3). Metaempiricism, in this way, prioritizes human agency in the present and shows that human beings have the capacity to shape the future, for better or worse. Like all good SF, Carson’s fable “distances us from the contemporary world-system only to return us to it” (Suvin qtd. in Canavan, “Preface” XI).

Carson’s metaempirical fable contributes to her ability to successfully and compellingly extrapolate her fears about chemical pesticides from the present to the future. The fictional dystopia in the fable is a projection of the real-world dystopia she lays out for the reader in the remainder of the book, and (as an introduction) it foreshadows many if not all of the intersecting issues she will explore: fatal chemical exposure among farmers and scientists, the slower and gradual threat of biological magnification for human beings and non-human animals, the destruction of forests and countryside flora, the contamination of entire water-based ecosystems and the collapse of fish populations, and the decline of bird species. On the second page of the fable, for example, Carson foreshadows the following real-world analogues that she will discuss later in the book: sick farmers and their families (Chapter Three), the collapse of fisheries and the absence of anglers (Chapter Four), the absence of birds (Chapter Eight), and puzzled doctors (Chapter Twelve). Carson’s narrator also emphasizes the beauty of the countryside—“Along the roads, laurel, viburnum and alder, great ferns and wildflowers delighted the traveler’s eye through much of the year. Even in winter the roadsides were places of beauty, where countless

birds came to feed on the berries and on the seed heads of the dried weeds rising above the snow”—which is juxtaposed in Chapter Six with the complaints of conservationists and everyday citizens in the American Northeast about the destruction of the countryside’s flora by indiscriminate spraying (Carson 1-2). Much like the relationship between twenty-first-century climate fiction and the real climate events it dramatizes, Carson imagines a scenario that blends both fiction and nonfiction:

I know of no community that has experienced all the misfortunes I describe. Yet every one of these disasters has actually happened somewhere, and many real communities have already suffered a substantial number of them. A grim specter has crept upon us almost unnoticed, and this imagined tragedy may easily become a stark reality we all shall know. (Carson 3)

In this sense, Carson projects real-world concerns about chemical pesticides into a speculative future that is completely inundated by these same chemicals. In this way, the fable is metaempirical and extrapolative. In this way, too, the fable adopts the logic of the future anterior that is contained within all dystopian warnings: if we wait too long, we may reach a point in the future when it is too late to act. The fable implores that the time to act, therefore, is now—before a future point in which *it will have been too late*. In fact, only three pages into the body of *Silent Spring*, Carson probes: “All this has been risked—for what? Future historians may well be amazed by our distorted sense of proportion. How could intelligent beings seek to control a few unwanted species by a method that contaminated the entire environment and brought the threat of disease and death even to their own kind?” (Carson 8).

A Real-World Dystopia

While, as Killingsworth and Palmer argue, critics have focused much of their attention on Carson's fable, I argue that the fable can only be properly understood in the context of the real-world dystopia and its potential alternatives that the remainder of the text elaborates. The fable is a fictional, extrapolated account of what Carson believes may occur in the future if the *socioecological* problems she addresses in the book continue unabated: if science remains an instrument wielded by industry for profit; if Western (specifically American) ways of relating to non-human nature remain fundamentally exploitative and anthropocentric; if governments fail in their duty to protect citizens from indiscriminate chemical pesticide use. If, as Moylan argues, "dystopia's foremost truth lies in its ability to reflect upon the causes of social and ecological evil as systemic" (Moylan, *Scraps* XII), then Carson clearly taps into this foremost truth by linking ecological degradation with contemporary socioeconomic structures and anti-ecological thinking. In this context, her depiction of ecological degradation as fundamentally *socioecological*, rather than simply 'environmental,' also insightfully links the destruction of ecosystems with one of dystopia's most common preoccupations: authoritarianism. Carson's evocation of totalitarianism takes advantage of the cultural currency of dystopian novels like George Orwell's *Nineteen Eighty-Four* (1949), Kurt Vonnegut's *Player Piano* (1952), and Ray Bradbury's *Fahrenheit 451* (1953) by showing that totalitarian tendencies can occur in apparently democratic Western societies. She achieves this by illustrating that the beneficiaries of the real-world chemical dystopia that is emerging are the select few who have capitalized on turning weapons of wars into weapons against non-human nature, while the population at large is exposed to chemical contamination and made to live in degraded environments without their consent. Accusingly, she asks:

who has decided—who has the right to decide—for the countless legions of people who were not consulted that the supreme value is a world without insects, even though it be also a sterile world ungraced by the curving wing of a bird in flight? The decision is that of the authoritarian temporarily entrusted with power; he has made it during a moment of inattention by millions. (Carson 127)

Here, Carson links the control and destruction of non-human nature with exploitative social relations, much as I argued in Chapter One that *Nineteen Eighty-Four*, *Player Piano*, and *Fahrenheit 451* show how the control of non-human nature and energy power are dialectically related to the expression of political power (access to energy-power enables more political power, which enables greater control of non-human nature, and so on indefinitely).

One of the ways that Carson's *Silent Spring* demonstrates that the causes of the dystopia she warns about are socioecological is by establishing both empirical and discursive links between the production of chemical pesticides and nuclear weapons. Linking scientific concerns about nuclear contamination to what proponents of nuclear technologies suggested were the political benefits of the bomb, Carson lamented in a 1963 speech that “environmental contamination by radioactive materials ... is apparently an inevitable part of the atomic age. It is an accompaniment of the so-called ‘peaceful’ uses of the atom as well as of the testing of weapons” (Carson qtd. in Foster, *Nature* 510). In describing indiscriminate chemical pesticide usage as an extension and domestication of the use and testing of nuclear weapons abroad, she emphasized that proponents of both technologies threatened life on Earth by eschewing the precautionary principle in favour of economic interests. In this context, she leaned heavily on the widespread concern about nuclear weapons to communicate her scientific warnings to the public by “cleverly using the public’s knowledge of atomic fallout as a reference point [to describe]

how chlorinated hydrocarbons and organic phosphorus insecticides altered the cellular processes of plants, animals, and, by implication, humans. Science and technology, she charged, had become the handmaidens of the chemical industry's rush for profits" (Lear XV).⁴⁰ Early in the text, Carson links the lack of appropriate forethought and regulation on chemical pesticides usage with what anti-nuclear proponents argued was the recklessness of nuclear bombs: "the rapidity of change and the speed with which new situations are created follow the impetuous and heedless pace of man rather than the deliberate pace of nature" (Carson 7). The development of chemical pesticides, for Carson, is part of a historical, anti-ecological, and capitalist structure that privileges reckless innovation over regulation, as she warns that, "along with the possibility of the extinction of mankind by nuclear war, the central problem of our age has therefore become the contamination of man's total environment with such substances of incredible potential for harm" (Carson 8). Carson quickly extrapolates existing chemical contamination to the future, remarking that these chemical substances may come to "alter the very material of heredity upon which the shape of the future depends" (Carson 8).

As perplexing as Carson found it that anyone might "believe it is possible to lay down such a barrage of poisons on the surface of the earth without making it unfit for all life," she was keenly aware of how the union between science and "the gods of profit and production" was driving ecological degradation (Carson 7-8; Carson qtd. in Foster, *EAC* 25). Reviewing Carson's editorial notes, Wills explains that Carson intentionally wrote *Silent Spring* with a critique of postwar capitalism in mind: "*Silent Spring* attacked 1950s corporate America, 'an era dominated by industry, in which the right to make a dollar at whatever cost is seldom challenged'. Carson

⁴⁰ Wills similarly argues that "nuclear concerns 'pre-educated' Americans, readied them for *Silent Spring*. Unsurprisingly, nuclear references abounded in the final version of the book. Asserting the ties between atoms and pesticides, the first five chapters of *Silent Spring* all began or ended with nuclear imagery" (Wills 100).

jotted down the simple equation in her notes: ‘Byproduct of man’s pursuit of power and money = contamination of his environment’” (Carson qtd. in Wills 106). Like all dystopian texts, Carson’s is “cautionary pedagogy”: she hoped to “empower her readers, pushing the ‘right to know’ and citizen action” (Thaler 91; Wills 106). In the context of the postwar Great Acceleration, it was immensely profitable for the chemical pesticides industry to lobby local and state officials and flood farming operations, grocery stores, and hardware retailers with toxic chemical, which explains Carson’s emphasis in *Silent Spring* on how unwitting farmers and consumers are routinely poisoned by the products that were supposed to make their lives cleaner, safer, and more prosperous. Although Carson reveals the utopian promises of *chemical pesticides* to be either misguided or deliberately misleading, her conviction that an ecocentric form of science might still be capable of managing human/non-human nature relations, which I will discuss in detail shortly, parallels both Orwell’s and Vonnegut’s refusal to condemn machines *in toto*, despite their genuine concerns about their effects on human beings.

Carson subverts the utopian promises made by the chemical pesticides industry by demonstrating that chemical pesticides are harming the people that they are intended to help. In place of an alleged consumer and agricultural utopia—a world rid of pests, wormy-apples, and garden weeds—is a chemical dystopia marred by ecological collapse and consumer exposure to carcinogens. She provides clear examples in the text of how environmental and agricultural policies and consumer protection regulations have been shaped by the socioeconomic imperatives of America’s postwar growth-based economy, and how the notion of economic progress was narrowly mobilized in a way that precluded care for the environment (humans and non-humans). In the following passage, she links the imperatives of socioeconomic *development*

with the ecological *collapse* of grassland ecosystems across America; only an illusion of progress, she explains, this utopia is dystopia disguised:

the bitter upland plains, the purple wastes of sage, the wild, swift antelope, and the grouse are then a natural system in perfect balance. Are? The verb must be changed—at least in those already vast and growing areas where man is attempting to improve on nature’s way. In the name of progress the land management agencies have set about to satisfy the insatiable demands of the cattlemen for more grazing land. (Carson 66)

For Carson, the problem is that economic development (which benefits a small number of human beings) is prioritized over the well-being of the ecosystem. These same “agencies” that attempt “to improve on nature’s way” offer a vision of “progress” that is antithetical to the hope that she offers in the introduction and elsewhere: a sustainable and symbiotic relationship that balances the needs of human societies and the integrity of the non-human world (Carson 66). In the context of these contemporary dystopian conditions, she warns, the needs and safety of human and non-humans is sacrificed to “the gods of profit and production” (Carson qtd. in Foster, *EAC* 25), as the same lack of science-based decision-making that enabled overgrazing also allows the indiscriminate spraying that exposes human beings to carcinogens. The failure to account for the effects of biological magnification in ecosystems, she argues, exposes consumers to levels of chemical contamination well-above what is safe, remarking that such insufficient consumer protections is to contaminate “public food supplies with poisonous chemicals in order that the farmer and the processor may enjoy the benefit of cheaper production—then to penalize the consumer by taxing him to maintain a policing agency to make certain that he shall not get a lethal dose” (Carson 183). For Carson, the problem is both socioecological and systemic, as the profit motive exposes humans and non-human nature to *avoidable* harm. The failure of oversight

bodies like the FDA raises serious questions about supposedly democratic institutions' duty to care for their citizens—a failure in this case that results in a tragic irony for the American the consumer who, “in the end[,] . . . pays his taxes but gets his poisons regardless” (Carson 183).

Carson's understanding of the chemical pesticides problem as socioecological enables her to identify dangerous relationships between industry, science, and the expansion of consumer capitalism. She warns that consumers are bringing these carcinogenic products into their homes unaware, writing that “if a huge skull and crossbones were suspended above the insecticide department the customer might at least enter it with the respect normally accorded death-dealing materials. But instead the display is homey and cheerful, and, with the pickles and olives . . . the rows upon rows of insecticides are displayed” (Carson 174). These are the same chemicals that, “if dropped to the floor by a child or careless adult[,] everyone nearby could be splashed with the same chemical that has sent spraymen using it into convulsions” (Carson 174). Shockingly, her public appeal for caution and consumer protections was met with thinly-veiled sexism and strong anti-utopian sentiment, as one spokesperson for The National Agricultural Chemical Association remarked that “the balance of nature is a wonderful thing for people who sit back and write books or want to go out to Walden Pond and live as Thoreau did. But I don't know of a housewife today who will buy the type of wormy apples we had before pesticides” (Wills 107). Bizarrely, the spokesperson seems to concede that the use of chemical pesticides has drawbacks—why else ridicule the idea of “the balance of nature” and suggest it is a necessary casualty to avoid imperfect fruit?—while also assuming that ‘housewives’ would willingly give up a safe environment and their families' health to avoid “wormy apples” (Wills 107). For Carson, however, a future without wormy apples is not worth the risk of destroying ecosystems and poisoning the people who live off them. Instead, as I will demonstrate shortly, Carson

refused to accept the anti-utopian threat that the choice was chemical pesticides or worse (wormy apples!), as she advocated for an ecocentric form of biological management that could avert the dystopia she argued was coming into fruition.

Carson's critics accused her of promoting unrealistic, anti-modern utopian dreams, yet she countered this by arguing that it was actually the industrial chemical companies who promoted a false utopia that was quickly resulting in a real-world chemical dystopia. So, while chemical pesticides were championed by their proponents as routes to a clean and plentiful future, she argued that such chemical pesticides threatened life on earth and foreclosed the possibility of symbiotic human/non-human relations in the future. At the core of this problem, for Carson, is that modern science's desire to control non-human nature "is a singularly narrow one," and for this reason it is anthropocentric and fundamentally anti-ecological. For example, she laments that "if we see any immediate utility in a plant we foster it. If for any reason we find its presence undesirable or merely a matter of indifference, we may condemn it to destruction" (Carson 63). The hubristic, instrumentalist, and anthropocentric assumption that human beings can and should manipulate non-human nature with complete disregard for naturally occurring ecological processes is foundational to the industrial-scale production and reckless application of chemical pesticides. In this context, she earlier warns that "future historians may well be amazed by our distorted sense of proportion" (Carson 8), as the profit motive that exposes ecosystems and human beings to harm combines with an instrumentalist and anthropocentric understanding of science to threaten the habitability of Earth in the future. In early notes of her text, Carson echoes Vonnegut's anxieties about how American life was increasingly influenced by the imperatives of science, engineering, and capitalism. She disapproved of "of man's efforts to gain mastery over nature," and warned that "the control operations are themselves dangerously out of

control. . . . She feared a world of ‘domination by the engineer’” (Carson qtd. in Wills 91-92). Far from a sign of *progress*, as her opponents suggested, the domination of non-human nature *was not* “a step towards a more civilised and sophisticated world,” but a step towards a *dystopian* “culture of killing and a growing lack of awareness of environmental responsibilities” (Wills 94).

Carson points out the irony that while greater control of non-human nature is often associated with progress, these misguided efforts have produced a dystopian environment that is pervaded by human-induced carcinogens that also risks the health of entire ecosystems.⁴¹ Throughout *Silent Spring*, efforts to control non-human nature through chemical pesticides are shown to backfire, often producing the opposite of the desired effect, such as when various insect and/or plant eradication programs result in the proliferation of the species that they were intended to wipe out once their evolutionary competitors have been exterminated, or attempts to save forest populations (e.g., Dutch elm) through spraying programs that unintentionally decimate local bird and fish populations.⁴² The greatest irony of all is that, over centuries, human beings managed to escape “scourges of smallpox, cholera, and plague that once swept nations before them,” yet, “as the tide of chemicals born of the Industrial Age has arisen to engulf our environment, a drastic change has come about in the nature of the most serious public health problems” (Carson 187). The major threats posed to human life are now not natural “disease organisms” and “infectious disease,” but instead “a different kind of hazard that lurks in our environment—a hazard we ourselves have introduced into our world as our modern way of life has evolved” (Carson 187). If becoming “modern” means ‘controlling nature’, then to be modern

⁴¹ Here, she echoes a somber warning from Vonnegut’s *Player Piano*: “Man has survived Armageddon in order to enter the Eden of eternal peace, only to discover that everything he had looked forward to enjoying there, pride, dignity, self-respect, work worth doing, has been condemned as unfit for human consumption” (Vonnegut 300).

⁴² As Carson approvingly quotes Owen Gromme: “In the name of progress are we to become victims of our own diabolical means of insect control to provide temporary comfort, only to lose out to destroying insects later on?” (Carson 113).

is also, paradoxically, to live in societies where pervasive risk is introduced into the environment by human beings, as the desire to ‘control nature’ with human-made technologies has led to a swath of new, preventable, *and modern* diseases. Carson later explains that these carcinogenic chemicals “have become entrenched in our world . . . [,] ironically, through man’s search for a better and easier way of life (Carson 242). Evoking the perspective of the future anterior, she points out the irony of human efforts to dominate non-human nature, lamenting that “to have risked so much in our efforts to mold nature to our satisfaction and yet to have failed in achieving our goal would indeed be the final irony. Yet this, it seems, is our situation” (Carson 245). Fortunately, however, there is hope that we might avoid this “final irony” before it is too late: there is hope contained even within this ironic situation in which (a small portion of) human beings have littered the environment with carcinogens:

The task is by no means a hopeless one. In one important respect the outlook is more encouraging than the situation regarding infectious disease at the turn of the century. The world was then full of disease germs, as today it is full of carcinogens. But man did not put the germs into the environment and his role in spreading them was involuntary. In contrast, man has put the vast majority of carcinogens into the environment, and he can, if he wishes, eliminate many of them. (Carson 242)

Though critics have tended to overlook the importance of alternatives to chemical pesticides to the book’s overall message, the hope that human beings will recognize that we possess the agency to rid the environment of these carcinogens and instead foster sustainable relationships with non-human nature, which are not premised on death and killing, provides a route out of the real-world dystopia she depicts.

Hope in Dystopia

As I have previously suggested, I argue that the rhetorical strength of *Silent Spring*'s warning of a dystopian future is drawn not only from dystopia's function as negative critique (*don't do this or else*), but also from the socioecological change it hopes to catalyze by offering hope within the pages of the text. In this latter sense, Carson's *Silent Spring* anticipates the important work of the critical dystopia in subsequent decades. The extent to which Carson interweaves hope and alternatives to chemical pesticides with her depiction of the ongoing real-world dystopia she is trying to prevent has been under-appreciated in the existing criticism. While some critics have suggested that there is little room for hope in the text because "the threat she outlines is so pervasive and irreversible" (Garrard 104), even favourable readings seem to suggest that *Silent Spring* is "essentially dark in tone" and that "it was not about beauty but about decay, not about life but death" (Wills 95). Critics like Killingsworth and Palmer who *do* note the hopeful elements—"the conflicting narratives of apocalyptic doom and millennial hope strive for dominance in *Silent Spring*"—nonetheless conclude that such elements appear "too late in the book and without the added power of having been forecasted by her opening 'Fable'" (Killingsworth and Palmer, "SF" 190, 185). These readings all fail to appreciate the extent to which Carson, *beginning with the fable*, relies on the image of two roads that the future might follow, which juxtaposes fear and hope, chemical death and a habitable future: "The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road . . . offers our last, our only chance to reach a destination that assures the preservation of our earth" (Carson 277). Like *all* texts within the dystopian tradition, Carson assumes that preventing the worst is possible, yet like the critical dystopia specifically, *Silent Spring* maintains hope within its pages, as Carson's direct

address to the reader suggests: “The choice, after all, is ours to make. . . . [W]e should no longer accept the counsel of those who tell us that we must fill our world with poisonous chemicals; we should look about and see what other course is open to us” (Carson 277-278).

Carson’s hope for alternatives to the real-world dystopia she imagines is rooted in a refusal to accept that there are no alternatives to the indiscriminate use of chemical pesticides that poison the planetary ecosystems to which humans belong. The theme of refusal recurs throughout the text and, in this sense, Carson seems to have anticipated by decades the destructive and nihilistic arguments espoused by proponents of (neoliberal) capitalism that there is no alternative, and the popular suggestion that “it seems to be easier for us today to imagine the thoroughgoing deterioration of the earth and of nature than the breakdown of late capitalism” (Jameson, *Seeds* XII). In this sense, too, Carson’s text embodies the hope that Levitas argues is a distinguishing feature of the critical dystopia: “the critical dystopia is the dark side of hope, and hopes for a way out; anti-utopia attributes the darkness to Utopia itself, and tells us the exits are ambushed” (Levitas and Sargisson 26). Carson explains *early and often* that hope and optimism are neither unfounded nor only found in the future, but rather “much of the necessary knowledge is now available but we do not use it. We train ecologists in our universities and even employ them in our governmental agencies but we seldom take their advice. We allow the chemical death rain to fall as though there were no alternative, whereas in fact there are many” (Carson 12). Foreshadowing alternatives to chemical death from the sky, Carson poses very early on what I consider to be the question at the heart of the book: “have we fallen into a mesmerized state that makes us accept as inevitable that which is inferior or detrimental, as though having lost the will or the vision to demand that which is good?” (Carson 12).

In addition to simply insisting that alternatives may be discovered, Carson specifies a wide range of policy alternatives and public-facing initiatives that offer hope for limiting the harm caused by the manufacture and application of chemical pesticides, such as increasing the FDA's budget and range of jurisdiction from federal (interstate) to include the state level,⁴³ continuing research and implementation of genetically modified and resilient species,⁴⁴ reducing carcinogens through legislation and raising funds for cancer research,⁴⁵ educating the public on the dangers of chemical products, and advocating for the replacement of chlorinated hydrocarbons with use of plant-based, non-toxic chemicals.⁴⁶ Yet, her most consistently developed expression of hopeful alternatives to chemical pesticides and the domination of non-human nature is grounded in the theory of biological management, which does not shy away from the notion that human beings might still have an influence on ecosystems that is qualitatively different from that of other species. Her understanding of biological management as an alternative to chemical pesticides is a route to an alternative *future* rather than a harkening back an Arcadian past, so when she writes that “the ‘control of nature’ is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man,” she was not suggesting that human beings kneel before the arthropods as her contemporary critics implied (Carson 297). Instead, she favours biological management solutions that allow *life*, which includes so-called pests, insects, animals, microscopic bacteria, and fungi—rather than the indiscriminate destruction of chemicals—to play an *active* role alongside human beings in affecting the shape of ecosystems. Biological management is “based on [an] understanding of the living organisms . . . and of the whole fabric

⁴³ Carson 181-183.

⁴⁴ Carson 117.

⁴⁵ Carson 242.

⁴⁶ Carson 184.

of life to which these organisms belong,” which is distinct from the one-size-fits-all model of chemical pesticide spraying (Carson 278).⁴⁷

Carson defends the use of biological management throughout the text as a nuanced alternative to the false choice between complete non-intervention or total annihilation of local biomes by using chemical pesticides. Her argument, it should be emphasized, is based in modern ecology and does not advocate for a hands-off approach to human/non-human nature relations. Killingsworth and Palmer explain that the text is willing “to criticize science while holding out hope for a scientific solution. . . . While ‘Stone Age’ scientists lead us down the dinosaurs’ path to extinction, the heroes of ecological holism beckon toward a better path” (Killingsworth and Palmer, “Narrative” 29). Rather than promoting a false ideal of perfect harmony, as her critics claimed, Carson clearly concedes that there are times when human beings come into conflict with non-human life in ecological systems as competitors for food or as disease vectors, and in such situations modern ecological methods can and should be used to the benefit of human beings: “this is not to say there is no insect problem and no need of control. I am saying, rather, that control must be geared to realities, not to mythical situations, and that the methods employed must be such that they do not destroy us along with the insects” (Carson 9). There are examples throughout the text of her optimism regarding developments in biological management as an alternative to chemical pesticides, such as the promise shown in managing insect populations through the sterilization of males, especially the housefly and screw-worm fly,⁴⁸ artificial attraction mechanisms that prevent breeding among gypsy moths,⁴⁹ and the use of natural

⁴⁷ In this context, Carson approvingly quotes entomologist Dr. Briejèr: “It is more than clear that we are traveling a dangerous road. . . . We are going to have to do some very energetic research on other control measures, measures that will have to be biological, not chemical. Our aim should be to guide natural processes as cautiously as possible in the desired direction rather than to use brute force” (Briejèr qtd. in Carson 275).

⁴⁸ Carson 278-282.

⁴⁹ Carson 285-286.

parasitism to contain black-headed budworm populations (the alternative to which is indiscriminate spraying, which killed an entire generations of Coho salmon in British Columbia, Canada).⁵⁰ I will conclude my discussion of *Silent Spring* by looking closely at Carson's discussion of the Coho salmon killed by the indiscriminate use of DDT, and the biological alternative that might have prevented this catastrophe, as it draws together a number of elements that I have considered so far.

Carson's discussion of the collapse of the British Columbia Coho salmon population in 1957 that resulted from indiscriminate DDT spraying that was intended to curb forest defoliation caused by the black-headed budworm exemplifies her refusal to accept a future that is unnecessarily plagued by destructive and anthropocentric chemical methods and her commitment to providing the public with knowledge and hope about potential alternatives. She is optimistic that there are "alternative methods that are now known," and that we might have a future with less unnecessary ecological destruction if we "devote our ingenuity and resources to developing others" (Carson 138). Such alternative methods are "natural," which provides the hope of "using less toxic sprays or, better still, of introducing microorganisms that will cause disease among the budworms without affecting the whole web of forest life" (Carson 138). Here, Carson's perspective is biocentric as it is concerned with "the whole web of forest life," rather than based on a top-down relationship between human beings and the object that is selected for chemical annihilation (which, tragically, kills many unrelated forms of life in the ecosystem). She argues that there "are ways to solve this problem—to preserve the forests and to save the fishes, too," while refusing to accept the anti-utopian suggestion that "we must resign ourselves to turning our waterways into rivers of death [and] follow the counsel of despair and defeatism" (Carson 138).

⁵⁰ She explains that "in at least four major streams almost 100 per cent of the salmon were killed" (Carson 138)

Not only are these chemical methods reproducing terrible unintentional effects like killing an entire generation of salmon, “it is important to realize that chemical spraying of forest insects is neither the only way nor the best way”: there “are cases on record where natural parasitism has kept the budworm under control *more effectively than spraying*. Such natural control needs to be utilized to the fullest extent” (Carson 138, emphasis added). A more measured science that is grounded in ecology, she writes earlier in the book, can offer “methods aimed not at destroying a particular species but at managing . . . a living community” (Carson 81). In this sense, Carson’s advocacy for biological management takes a wider and more radical view of what constitutes a biotic community—animal, vegetal, fungal, bacterial, and microscopic forms of life—and focuses on this ecological community and its health as the object of analysis. Carson, in other words, is proposing an alternative to the dominant anthropocentric vision of non-human nature, which views the natural world variously as stocks and resources to be plundered and pests and enemies to be conquered. This ecology-based alternative echoes the symbiosis with which the book opens: in a town “where all life seemed to live in harmony with its surroundings” (Carson 1). In order to avoid the dystopia that the fable projects and that Carson’s contemporary world reflects, Carson concludes her book by advocating for hope in “new, imaginative, and creative approaches to the problem of *sharing our earth with other creatures*” (Carson 296, emphasis added). This requires “the awareness that we are dealing with life—with living populations and all their pressures and counterpressures, their surges and recessions” (Carson 296).

5. Paul Ehrlich's *The Population Bomb* (1968/1971)⁵¹

Paul Ehrlich's writing and activism shaped debates about population growth and the environment from the mid-1960s onward, and like *Silent Spring*, *The Population Bomb* evoked the spectre of a dystopian future that would be all-the-more tragic because it was all-too-avoidable. Like Carson, too, he often reflected on his role as a scientist and the role of science in democratic societies, imploring "ecologically informed biologists . . . to speak up in policy debates, to 'come out of our ivory towers'." "Following Rachel Carson's lead," he implored, "we must fight abuses wherever they occur" (Ehrlich qtd. in Robertson 132). In this reading of Ehrlich's *The Population Bomb* I argue that, like Carson, he drew heavily from the speculative mode and the spectre of crisis which pervaded the cultural mood of the 1960s: his text conveys a dystopian structure of feeling in its persistent warnings of an uninhabitable future, yet he insists that this potential future is one that human beings might cooperate to prevent.⁵² Ehrlich's book has been read largely if not exclusively in the context of its discussion of the causes and effects of overpopulation, which is understandable given its title (which he objected to) and legacy as *the* key book in the anti-population growth movement. In this context, he has been criticized for portraying population dynamics as the source of humankind's problems (and population control measures as the silver bullet to these problems). However, Ehrlich vehemently argued that a number of interrelated issues were contributing to the increased likelihood of a dystopian future: not only unprecedented population growth, but also anti-scientific and often conservative

⁵¹ I have chosen to close read the second edition of Ehrlich's *The Population Bomb*, which is the revised 1971 version of the 1968 original. The edition of the 1971 version of the text that I am citing was republished in 1978 with a section at the end titled "Update-1978". In broad strokes, little is changed between the 1968 edition and the 1971 edition I am using. However, I have chosen the 1971 edition because the second chapter—where Ehrlich offers three speculative fictional scenarios—is extended significantly, while the other chapters were mainly left in the original form or lightly edited for clarity. I will discuss the significance of these changes when relevant.

⁵² As Garforth helpfully explains, Ehrlich was part of a broader shift in which "popular science often used futuristic narratives and science-fictional rhetorics to warn of impending environmental crisis" (Garforth, "EF" 245).

religious beliefs that limited peoples' (especially women's) reproductive freedoms, the vulnerability of societies that are artificially propped up by pesticides and Green Revolution technologies, excessive consumption in Western societies (especially the United States), and unconscionable economic and political inequality between what he referred to as over- and underdeveloped nations.

I argue that critics have frequently dismissed Ehrlich's 'environmental apocalypticism' and overlooked the extent to which his anxieties about the future are not simply resigned predictions of impending doom, but rather are grounded in the desire to collectively address socioecological concerns like consumerism, wealth inequality (within and across nations), and largely Western, Judeo-Christian culture's anthropocentric and anti-ecological understanding of human/non-human relations. Like *Silent Spring*, *The Population Bomb* borrows rhetorical strength from the resources of SF, such as metaempiricism and extrapolation, to convey those elements of the present that might foster a dystopian future, while also showing that there are reasons to hope such a future may be avoided. To an even greater extent than Carson, Ehrlich explicitly uses the dystopian literary form to provide the reader with three alternative scenarios for the future, which are plagued by environmental and humanitarian crises that result from overpopulation and overconsumption. While each scenario entails considerable human suffering (like all dystopian fiction), each scenario offers progressively more hope than the last. Within these scenarios, I argue, Ehrlich expresses numerous possibilities *for avoiding worst case scenarios*; the alternatives he presents make his text consonant with critical dystopian texts that follow in subsequent decades.

First, I want to take a moment to note that Ehrlich deserves criticism (and has received it) for his arguably racist depictions of overpopulation⁵³ and for the equally problematic failure to acknowledge how a focus on poverty and fertility as causes of ecological degradation can “elide” the ways that population control measures are often aimed at and tend to “disproportionately affect women and people of color” (Merchant, *BPB* 203). A healthy dose of skepticism is usually warranted when Western researchers, academics, advisors, and experts decide to ‘fix’ global problems. I am not insensitive to these concerns, and I have no personal investment in defending Ehrlich from these criticisms when warranted. These issues will recur in my reading and I have done my best to address them. I will also show that Ehrlich took these criticisms seriously and became outspoken about how, in his own words, “the population problem first of all . . . is primarily a problem of the affluent whites of the world” (Ehrlich qtd. in Robertson 174). I also believe that an open and nuanced discussion of Ehrlich’s text will show that his book conveys that people who have ‘population anxieties’ should also support progressive critiques of socioeconomic inequality, as overconsumption in the West and the maintenance of exorbitant standards of living for some Westerners reproduces ecological degradation, poverty, and political instability elsewhere. I hope to show that Ehrlich’s text—all the more important in this context as a synecdoche for the anti-population growth movement—might actually have the ability to *soften* militant anti-population growth rhetoric that assumes overpopulation is caused by ‘other people’ in ‘other places.’ As Ehrlich acknowledges early in the book, rich nations have a population problem, too: their people (admittedly too capacious a term) “consume a disproportionate amount of the world’s resources and are the major polluters” (Ehrlich 7).

⁵³ Such as in Chapter One’s opening scene in Delhi, which critics like Heise have discussed (Heise 74).

Criticism

Some critics who have focused on the rhetorical and literary elements of *The Population Bomb* have suggested that the book's environmental apocalypticism and framing of environmental crisis was ineffectual or harmful to the environmentalist cause. Garrard, for example, has argued that Ehrlich's framing of overpopulation-driven environmental crisis may have negative long-term effects, as he claims that "Ehrlich's strategic hyperbole" about the immediacy of ecological collapse "might be justified in the interests of successful persuasion, but the long-term dangers this approach poses for environmentalist causes may outweigh its rhetorical usefulness" (Garrard 108). Frederick Buell carries this impulse further, not only questioning the efficacy of Ehrlich's adoption of "crisis discourse" (F. Buell, *Apocalypse* 185), but arguing that his "predictions" about a thoroughly degraded global environment and starving populations in 'underdeveloped countries' was "a political liability almost as much as an asset. It calls up a fierce and effective opposition with its predictions; worse, its more specific predictions are all too vulnerable to refutation by events" (F. Buell, *Apocalypse* 185). Even scholars like Paul Sabin who otherwise appear sympathetic to Ehrlich's environmental activism have lamented his "stark pronouncements of impending doom," as "those seeking to oppose environmental action had only to point to his failed prognostications" (Sabin 432). A major problem with this criticism, which is all-the-more perplexing when it comes from literary scholars, is that Ehrlich was exceptionally clear about the fact that "scenarios are stories about the future designed to help people think about it. *They are never predictions*" (Ehrlich 220, emphasis added). His *fictional speculations*, Killingsworth and Palmer rightfully note, "are not to be taken literally. Their aim is not to predict the future but to change it" (Killingsworth and Palmer, "Narrative" 40-41). As I

will show, his future-oriented language and three scenarios are “cautionary pedagogy” that work through extrapolation and not prediction (Thaler 91)

Echoing Killingsworth and Palmer’s concerns about critical readings of *Silent Spring*, I argue that critics have focused too often on the apocalyptic elements of Ehrlich’s text. *While there are apocalyptic elements* like nuclear war, the spread of infectious disease, and mass starvation, Ehrlich emphasizes how these *preventable* tragedies result from the failure of human efforts and how we might still address these problems before it is too late. In this context, Ehrlich’s anxieties align with what Patricia McManus has recently (2022) and helpfully suggested distinguishes dystopia from similar genres that depict bad futures, such as apocalypse: dystopia “is a type of fiction differentiated from others not so much because it is about oppression or about suffering but because it is about the organisation of oppression and suffering, the planned or designed production of suffering” (McManus 1). Yet, critics have tended to narrowly focus on the text’s apocalyptic elements related to population growth to the exclusion of his thorough diagnosis of major socioecological problems and how they are depicted in his dystopian scenarios. One contemporary reader practically admits to only paying attention to the book’s first few pages, dismissing the book as alarmism much like Carson’s critics had done. A respected oceanographer and Director of Harvard’s Center for Population Studies, Dr. Roger Revelle labelled “Ehrlich the ‘New High Priest of Ecocatastrophe’” (Revelle qtd. in Sabin 53-54). He was dismayed by the “rampant use of ‘apocalyptic adverbs and adjectives’: ‘staggering, sobering, disaster (three times), enormously, drastically, catastrophic, dramatically, tremendous, highly lethal, extremely dangerous (twice), especially virulent, more severe, extremely fortunate, extremely vulnerable, almost total, high potential, renewed spectre’” (Revelle qtd. in Sabin 54). All of this, he complained, “appeared in only four of the book’s three

hundred-plus pages” (Revelle qtd. in Sabin 54). Emphasizing four pages, Revelle conveniently fails to mention the roughly one hundred pages, or nearly half the book, dedicated to “What Needs to Be Done” and “What Can You Do?”. For Revelle, as for Garrard and Buell, Ehrlich is accused of presenting apocalyptic scenarios that are too-dramatic and disempower the reader, leaving audiences with the enervating sense that crisis is all-but-inevitable. More recent readings like Merchant’s (2021) that have taken seriously the speculative and literary elements in Ehrlich’s text reproduce this concern in a slightly different form. Critical of Ehrlich, Merchant writes that “*The Population Bomb* was, in fact, largely a work of science fiction. It devoted considerable space to spinning out horrific and highly speculative futures, including global nuclear conflagration and massive famines” (Merchant, *BPB* 166). While it is true that Ehrlich’s scenarios portend dark futures—they are dystopian, after all—she fails to acknowledge that these texts are animated by a sincere hope that things could be otherwise. As Killingsworth and Palmer recognize two decades earlier, “the entire purpose of the . . . scenarios was to stimulate the kind of action that would prevent events such as those described in the scenarios from occurring” (Killingsworth and Palmer, “Narrative” 40).

Socioecological Crises

Like Carson’s *Silent Spring*, Ehrlich’s *The Population Bomb* exemplifies “dystopia’s foremost truth[:] . . . its ability to reflect upon the causes of social and ecological evil as systemic” (Moylan, *Scraps* XII). In this sense, he warned that population growth intersected with the use of nuclear weapons, chemical pesticides, and mass consumerism to alter the biochemical make-up of the planet and threaten the habitability of the future. Like Carson, he was especially worried about how degrading the planet’s natural processes through chemical pesticides and

pollution risks altering the planet so quickly and dramatically that once we realize the extent of the problem *it will have been too late to act*. In this context, he evokes the spectre of an unstable future and probes: “when we pollute, we tamper with the energy balance of the Earth. The results in terms of global climate and in terms of local weather could be catastrophic. Do we want to keep it up and find out what will happen? What do we gain by playing ‘environmental roulette’?” (Ehrlich 39).

As discussed above, some anti-population growth advocates used environmental concerns as a cover for anxieties about preserving white, middle-class lifestyles domestically and the dominance of Western, capitalist nations globally. In Ehrlich’s case, however, his emphasis on overpopulation must be at least partially understood as a politically savvy strategy to mobilize support for environmental protection. He was particularly worried about the ecological effects of consumerism in the West and the use of chemical pesticides and unsustainable agricultural practices across the globe. He became politically invested in population growth *only after he felt his pesticides advocacy had reached a dead-end*. According to Merchant, “it was easier, he believed, to appeal to Americans to reduce their childbearing—and even to lobby the government for policies limiting family size—than to take on the pesticide industry. He reasoned that, with fewer people, there would be less agriculture and therefore less need for pesticides” (Merchant, *BPB* 167-168). Ehrlich’s strategic change of emphasis was effective in this sense, as he convinced American lawmakers and the public of the urgency of the ecological situation that lie ahead. Similarly, Robertson argues that we cannot properly understand Ehrlich’s overpopulation anxieties outside of the context of chemical pesticides, as they were widely perceived to be necessary to support a rapidly expanding global population: “at the core of Ehrlich’s concern lay an often overlooked connection between population growth and synthetic pesticides” (Robertson 142).

Robertson explains that “very few people, not even other Malthusians, connected the two issues. Many spoke of resources, but few emphasized environmental deterioration and limits. Ehrlich stressed shortages, but he also rang the alarm about the damage from pesticides, fertilizers, and other high-production methods” (Robertson 142). While proponents of new agricultural fertilizers and chemical pesticides presented them as the way to bring about utopian abundance and solve world hunger, Ehrlich was convinced that technological solutions (such as these Green Revolution technologies) would be unable to keep pace with the ecological impacts of growing populations and the expansion of middle-class consumer lifestyles. According to Ehrlich, an increased reliance on scientific and technological advancements to meet global food demands would only leave already food-insecure populations even more vulnerable to crashes, while chemical pesticides and artificial fertilizers would irreparably harm (and already were harming) the biosphere:

the rate of soil deterioration will accelerate as the food crisis intensifies. Ecology will be ignored more and more as things get tough. It is safe to assume that our use of synthetic pesticides, already massive, will continue to increase, especially in UDCs [‘underdeveloped countries’]. In spite of much publicity, the intimate relationship between pesticides on the one hand and environmental deterioration on the other is not often recognized. (Ehrlich 30)

Clearly more indebted to Carson than Malthus here, Ehrlich’s fear in this case is not that exponential population growth inevitably outpaces geometric food production, but rather that food production regimes dependent upon petrochemicals will hasten environmental collapse and render already vulnerable populations *more vulnerable* in the long run when these systems fail. It is for this reason that, despite the emphasis on famine in discussions of overpopulation, Ehrlich warned that “our problems would be much simpler if we needed only to consider the balance

between food and population. But in the long view the progressive deterioration of our environment may cause more death and misery than the food-population gap” (Ehrlich 26). And, though “it is just this factor, environmental deterioration, that is almost universally ignored,” it is precisely this problem that he extrapolates from the present in his depiction of highly undesirable futures (Ehrlich 26). Moreover, as I will show shortly, each scenario is progressively less bad (I hesitate to use the term ‘better’ given that they are all dystopian) and more hopeful because each successive scenario depicts greater collective cooperation in the face of these challenges.

Much like Carson insisted that chemical pesticides posed *socioecological* rather than simply environmental problems, Ehrlich understood Western levels of affluence and indefensible wealth inequalities within and across nations as *socioecological* rather than simply social problems, warning that such inequities were leading the planet headlong into environmental catastrophe. Initially, Ehrlich was criticized for not explicitly acknowledging the links between anti-population growth discourse and histories of racial and colonial oppression both at home and abroad. Robertson notes that “Black concerns about population control had a real basis in history,”⁵⁴ and that many “African Americans knew this history far better than most white environmentalists, who like Ehrlich, tended to stress their color-blind universalism and sympathy for the civil rights movement” (Robertson 173). “Upset” by these legitimate criticisms, Ehrlich made a conscious attempt to alter his message, as by 1969 (two years before the 1971 reissued *The Population Bomb*), “he started to routinely acknowledge that population planning was, to some extent, ‘a white racist plot.’ About one-third of all those people who advocate population control, he explained in one article, ‘actually mean control [of] Blacks, or the poor, not the white

⁵⁴ In the full passage, Robertson explains this history: “White slave owners had manipulated sex and reproduction for their own benefit, and during the twentieth century some white elites pushed birth control and sterilization, often with the specific intent of reducing black populations” (Robertson 173).

or the affluent” (Ehrlich qtd. in Robertson 173). By the late 1960s, he began to openly discuss how ‘environmental’ problems (such as soil degradation and pollution) and ‘social’ problems (such as poverty and racism) were inseparable (i.e., *socioecological*), which is the theoretical basis of what scholars and activists today refer to as environmental justice. Within the United States, for example, Ehrlich would become an outspoken critic of President Richard Nixon who, despite his initial promises to make environmental protection one of his administration’s top priorities, failed to follow through. He criticized President Nixon for “ignoring environmental injustices inflicted on blue-collar workers, the poor, and racial minorities. ‘They must work and live in the smog and filth, they must labor in farm fields exposed to high risks of pesticide poisoning—they can’t live upwind of the pollution along with Nixon’s millionaire cronies” (Ehrlich qtd. in Sabin 52). Internationally, Ehrlich and others labelled “Malthusian environmentalists” had “identified and called attention to environmentally destructive patterns of modern American society—especially overconsumption—far sooner and with more clarity than others” (Robertson 10). Unlike some of his contemporaries in the anti-population growth movement, Ehrlich *did not* place blame solely or even mainly on poor and racialized people for the ‘population bomb,’ but instead laid the greatest share of blame on American levels of consumption and the resource imperialism required to sustain it. Discussing the relationship between population growth, the Vietnam War, and environmental degradation, he expressed that

the population problem first of all . . . is primarily a problem of the affluent whites of the world. . . . In our country for instance, our minority groups—the Blacks, the Chicanos and so on—are generally sufferers from white pollution, not creators of it. I would like to point out that the Vietnam War . . . is part and parcel of the whole thing. Our legions are marching over there and elsewhere in the world because we—a very small portion of the

world's population—consume what is now estimated to be thirty-three and a third percent of the natural resources. . . . Fundamentally the rich of the world are still stealing from the poor. (Ehrlich qtd. in Robertson 174)

Ehrlich's emphasis on the dynamics between wealthy consumer nations and the people that have historically borne the brunt of Western colonialism and imperialism is clear in *The Population Bomb*. This emphasis marks not only a concern with environmental justice, but an understanding of environmental degradation as a complex socioecological issue that is irreducible to population dynamics alone.

Ehrlich argued that Western levels of consumption were an undeniable causal factor in existing conditions of environmental deterioration, hunger, and even military conflict. He also believed that the ecological effects of overpopulation could not be measured in a vacuum from other socioecological drivers of environmental degradation, and he has publicly criticized one-dimensional interpretations of his work that focus solely on population dynamics. In a recently published article (2020) with his long-time editor, frequent co-author, and wife, Anne Ehrlich, they use the calculation of the area of a rectangle as an apt analogy for attempting to calculate the 'cause' of ecological degradation. Attempting to determine whether population or consumption contributes more to "environmental deterioration," they remark, "is roughly like claiming that the length of a rectangle is a much larger contributor to its area than its width" (Ehrlich and Ehrlich 23). In fact, the Ehrlichs had originally titled their book *Population, Resources, and Environment* and they objected (unsuccessfully) to the publisher's decision to retit it *The Population Bomb* precisely because it abstracted population from the other factors that contribute to the deterioration of the environment.⁵⁵ Paul lamented that the book's title "hung me with

⁵⁵ In an article written by Charles Mann that contains an interview with Paul Ehrlich for *Smithsonian Magazine*, he explains that Paul and Anne Ehrlich hated the book's title, which was the publisher's idea: "he and Anne had

being the population bomber” (Ehrlich qtd. in Mann). His concern with consumption and inequality is emphasized throughout the entirety of the text, and in the first few pages he is quick to distinguish between what he referred to as underdeveloped countries (UDCs) and overdeveloped countries (ODCs):

The UDCs are not industrialized, tend to have inefficient agriculture, very small gross national products, high illiteracy rates and related problems. That’s what UDCs are technically, but a short definition of underdeveloped is “hungry.” Most Latin American, African, and Asian countries fall into this category. The second group consists of the ‘overdeveloped countries’ (ODCs). ODCs are modern industrial nations, such as the United States, Canada, most European countries, Israel, the USSR, Japan, and Australia. They consume a disproportionate amount of the world’s resources and are the major polluters. (Ehrlich 6-7)

Ehrlich argued that, unfortunately, “most Americans are not aware that the U.S. and other developed countries also have a problem with overpopulation” (Ehrlich 3). Part of the problem, he explains, is that there is too much attention to overpopulation as a mere demographic statistic: “Remember, overpopulation does not normally mean too many people for the area of a country, but too many people in relation to the necessities and amenities of life” (Ehrlich 9). ODCs, whose name itself signifies gluttony for Ehrlich, were “overpopulated” because “they do not themselves have the resources to support their affluent societies; they must coopt much more than their fair share of the world’s wealth of minerals and energy. And they are overpopulated because they have exceeded the capacity of their environments” (Ehrlich 9). For Ehrlich, in other

‘wanted to call the book *Population, Resources, and Environment*, because it’s not just population.’ But their publisher . . . thought this was too ponderous, and asked Hugh Moore, a businessman-activist who had written a pamphlet called “The Population Bomb,” if they could borrow his title. Ehrlich reluctantly agreed. ‘We hated the title’ he says now. It ‘hung me with being the population bomber” (Ehrlich qtd. in Mann).

words, *overpopulation is not tied to specific population numbers*, and equally important, he observed that the unequal balance between ODCs and UDCs was driving the planet towards a dystopian future.

Just as Carson was convinced that the profit motive had resulted in the lack of regulation on toxic chemical pesticides, Ehrlich criticized capitalism's predatory nature as a global economic system by pointing out the fundamental contradiction of endless economic growth on a finite planet: the planet cannot sustain Western levels of consumption on a global scale.⁵⁶ In this context, he portrays the consumerist core of the American Dream to be a *false utopia* much like Carson had done with chemical pesticides, writing that "people have gotten the word about the better life it is possible to have. . . . They have seen automobiles and airplanes. They have seen American and European movies. They have what we like to call 'rising expectations.' If twice as many people are to be happy, the miracle of doubling what they now have will not be enough" (Ehrlich 7-8). What this suggests is that overconsumption in ODCs produces a mix of ecological degradation and poverty in UDCs because the planet cannot sustain a rise in standards of living in UDCs to the level of ODCs; by definition, ODCs "coopt much more than their fair share of the world's wealth" (Ehrlich 9). Importantly, Ehrlich frames this antagonistic relationship between ODCs and UDCs and the integrity of global ecological systems in terms of the future habitability of the planet. He argues that responsibility for the dire situation of much of the world's population rests with the ODCs, while also acknowledging that their levels of (over)consumption threaten the stability of the global environment *as a whole*: "there is no question that changing this pattern of behavior will be essential to the survival of both UDCs and

⁵⁶ Amitav Ghosh has made a similar argument in recent years, arguing that "what we have learned from this experiment [Modernity] is that the patterns of life that modernity engenders can only be practised by a small minority of the world's population" (Ghosh 92).

ODCs; the world can no longer afford to support and tolerate such inequities” (Ehrlich 23).

Presciently, Ehrlich anticipates current environmental discussions about climate reparations and calls from youth-led environmental activist groups by employing the language of theft to explain the situation between the world’s rich and everyone else—including, importantly, *future inhabitants of earth*:

anyone who takes a close look at the glut, waste, pollution, and ugliness of America today can testify . . . [w]e have assumed the role of the robber barons of all time. We have decided that we are the chosen people to steal all we can get of our planet’s gradually stored and limited resources. To hell with future generations, and to hell with our fellow human beings today! We’ll fly high now—hopefully they’ll pay later. (Ehrlich 140)

Questions of equity—not only between contemporary nations, but between super-consumers in the present and their less fortunate descendants—are central to Ehrlich’s speculative warnings about where the planet might be headed. As I will show below, Ehrlich was also clear that what we refer to today as climate reparations and wealth transfers are a necessary part of a just transition to a new, less ecologically harmful global economy. Ehrlich was deeply worried about the future that people would be forced to inhabit because of decisions that were (or were not) made in the present. As I have argued throughout this dissertation, this is one of the clearest ways in which dystopianism and environmentalism intersect: the recognition that the consequences of our actions in the present are, fairly or unfairly, to be borne out by human beings in the future.

Three Scenarios

Ehrlich extrapolates his real-world anxieties about population growth, Western consumerism, and ecological degradation into fictional form in his second chapter—titled “Ends of the Road”, echoing Carson’s use of the metaphor throughout *Silent Spring*—by providing three dystopian future scenarios. Ehrlich adopts the dystopian mode to express his fears about how the present is leading down a dangerous path to an undesirable future: the scenario is a means of exploring where contemporary society might end up based on the socioecological issues that he has identified. Importantly, these scenarios are “hypothetical sequences of events used as an aid in thinking about the future” that are grounded in the historical conditions of the present: they extrapolate from real-world tendencies and situations to offer three alternative metaempirical futures (Ehrlich 48). For Ehrlich, although “the possibilities are infinite [and] the single course of events that will be realized is unguessable,” thinking about the future *must be grounded in resolving the actual socioecological issues of the time* (Ehrlich 48). In this sense, the scenarios he imagines *must* rely on the same principles of metaempiricism and extrapolation as dystopianism more broadly, which I outlined in relation to Carson’s text, as he cautions against thinking about the future without a firm grounding in historical and scientific reality: “I will leave you to decide which scenario is more realistic, and I challenge you to create one more optimistic than the last. (I won’t accept one that starts, ‘In early 1972 the first monster space ships from a planet of the star Alpha Centauri arrive bearing CARE packages ...’)” (Ehrlich 77). Just as Carson concludes her fable with a direct address to the reader, so too does Ehrlich end his scenarios with a direct address. This suggests that both authors consciously understood their adoption of the dystopian mode as a form of “cautionary pedagogy” and believed that human beings possessed the collective agency to prevent the terrible futures they depicted (Thaler 91).

He refers to his scenarios as “a short story,” “a sequence of hypothetical news items,” and “a condensed history written in the future” (Ehrlich 48). I argue that in each scenario Ehrlich constructs a fictional situation that is an extrapolation of one or two key issues that contributes to the socioecological problems that I have discussed so far. Moreover, Ehrlich’s inclusion of these fictional scenarios exemplifies the complementarity of scientific speculations and dystopian representations of the environmental future of our planet. While each of the scenarios offers an undeniably grim outlook on the future—these are dystopian warnings—each scenario displays progressively more hope, and therefore more of the critical dystopian impulse, that there are alternative collective actions to the status quo that is threatening the future of life on Earth.

There are noteworthy changes in the three scenarios from the 1968 to 1971 editions of *The Population Bomb* that I argue reflect Ehrlich’s doubling-down on the importance of fictional elements to the text’s overall message. The extensive rewriting of these scenarios—the only part of the book that is rewritten in the 1971 edition rather than merely edited for clarity or to update statistics—conveys Ehrlich’s commitment to the role of speculative fiction as a tool for mobilizing socioecological change. The reimagined scenarios are not more realistic or accurate as ‘predictions’ (*they are not predictions*), but instead are more developed, textured, and entertaining as dystopian fictional scenarios for the future. In the first place, the three scenarios in the 1971 edition take up almost three times as many pages as they do in the original 1968 edition, while the remainder of the text remains roughly the same length. In the 1968 edition, the scenarios read largely like newspaper articles and/or scientific briefs, while the 1971 scenarios are significantly more ‘literary’ in the sense that they contain named characters who have personalities and relationships (scenarios one and three). These scenarios also self-reflectively adopt narrative strategies from dystopian fiction, make intertextual references to dystopian

fiction (Orwell's *Nineteen Eighty-Four*) and to fictional scientific texts that are written in the future from the perspective of the future (future histories), and display a self-awareness of their function in the overall text as a rhetorical device for warning about the potential outcomes of the status quo that are discussed in the first part of *The Population Bomb*. Ehrlich, in this context, has taken his own advice, as he argues later in the book that speculative fiction can generate public support for addressing the socioecological issues of overpopulation, ecological degradation, overconsumption, and wealth inequality. He implores professors in "English or drama" to "use the prestige of [their] position" to influence the public by "writ[ing] novels or plays emphasizing near-future worlds in which famines or plagues are changing the very nature of mankind and his societies" (Ehrlich 175).

Scenario One: Much as I argued that Orwell's novel conveys *socioecological* anxieties not only about political power, but also about nuclear weapons, energy, and the control of non-human nature, Ehrlich's first scenario foregrounds a central socioecological issue discussed in *The Population Bomb*: the failure of political institutions to take seriously the socioecological ramifications of a dependency on chemical pesticides, which results in famine and nuclear war. The opening paragraph of the first scenario cleverly situates this speculative future racked by famine (and, eventually, nuclear fallout) within the terrain of dystopianism with an allusion to Orwell's genre-defining *Nineteen Eighty-Four*, as the passage depicts President Burrell anxiously considering his chances of winning the 1984 election "if he were responsible for instituting the first food rationing since World War II" (Ehrlich 50). By alluding to Orwell's popular novel, Ehrlich leans on the book's cultural cachet by priming the reader for the depiction of a thoroughly dystopian future, which I propose we can think of as his attempt to both anchor his scenarios in this literary tradition, while also suggesting that this scenario is an alternative

future to what is portrayed in Orwell's *Nineteen-Eighty Four*—something like a *meta-metaempirical* future. In this scenario, the world (in the form of a UN agreement) has finally acknowledged that the use of chemical pesticides to increase food production is an ecologically-polluting, band-aid solution that pushes entire regions closer to food vulnerability. Yet, despite his biological advisor's warning that because of "the steady decline of the oceanic fisheries, we don't dare use massive doses of chlorinated hydrocarbons," President Burrell nonetheless decides that it is better to risk backlash from the international community by breaking the UN agreement than it is to deal with a hungry population and risk losing re-election (Ehrlich 51). Displaying what Carson and Ehrlich would have agreed is an all-too-typical ignorance and lack of concern for the socioecological costs of chemical pesticides by politicians, President Burrell unintentionally plunges the United States into a nuclear confrontation with UN member states because he believes that "surely the Russians aren't going to risk an all-out war over a lousy pesticide!" (Ehrlich 53, 55).

Like Carson, Ehrlich shows how chemical exposure makes its way from industrial production to everyday domestic spaces. Ehrlich achieves this by depicting family interactions both before and after the nuclear conflagration. Whereas scenario one in the 1968 edition merely describes geopolitical events between nations as the world navigates a food crisis, the depiction of peoples' everyday struggles to meet their food demands in the 1971 edition allows him to convey that the structural issues he identifies will also affect readers on a deeply personal level. Moreover, the familiarity of familial interactions allows Ehrlich to render these speculative experiences of an undesirable future "legible" for his readers, which McManus argues is essential to dystopia: "the dystopia imagines a future inhabited by people who are to the text's readers spectres of a world which is narrated as legible" (McManus 1). For example, and again

echoing Carson's emphasis on how chemicals make their way from factories into peoples' homes via the supermarket, most Americans in this scenario are "preoccupied with how to feed [their] famil[ies] adequately and safely" (Ehrlich 52). Many of Ehrlich's most pointed criticisms are levelled by Burrell's biological advisor, Dr. George Gilsinger, in conversation with his wife Jane Gilsinger. Interwoven with the explicit criticisms of chemical pesticides, however, are more textured representations of how daily life is affected by these chemical pesticides, as Jane (a name commonly used as a placeholder) was "happy" to "[get] to the supermarket early" and purchase "some of the special low-mercury cod for dinner-cod that . . . tested out at less than 22 ppm total chlorinates" (Ehrlich 52). This passage depicts the 'normal' or legible experiences of middle-class Americans in this dystopian future, including testing one's food for contamination, as a segue to the more general critique of chemical pesticides that the scenario explores.

Resembling Carson's critique of chemical pesticides as a false utopia, Ehrlich uses the dialogue between George and Jane as an opportunity to emphasize a key socioecological argument made in *The Population Bomb*: the challenges associated with overpopulation and overconsumption cannot be resolved with technological fixes like chemical pesticides. In this context, George laments while speaking to Jane that President Burrell "still doesn't get it[.] . . . The poor slob still thinks politics and economics are more important than ecology" (Ehrlich 57). President Burrell naively believes that he can sanction the use of socioecologically-harmful chemical pesticides without consequences. This distrust of the political class, and hence the need to educate the public who might collectively demand better from their leaders, is evident throughout the scenario, such as when George explains to Jane that he has resigned from his post as biological advisor because "the stupid bastard [Burrell] is going to authorize the use of methoxychlor-D to try to save the wheat crop. He says he's got to have the wheat belt votes"

(Ehrlich 53). Keeping in mind that Ehrlich has extrapolated this scenario 13 years into the future, he makes use of the future anterior to emphasize that if actions are not taken in the present, then the possibilities in the future will be significantly foreclosed: Burrell is forced to decide between rationing his own population or risking confrontation with the global community over further environmental damage. Ehrlich conveys to his readers that by 1984, in other words, it *will have already been too late* to fix environmental problems without a corresponding and significant decline in food production capacities, as is evident during George and Jane's conversation. After hearing that Burrell might start limiting food consumption, and confused about George's lack of enthusiasm, Jane says "but that should make you happy. You've been recommending it long enough" (Ehrlich 52-53). He tells her, however, that *it is now too late to act* and that millions of Americans are going to die despite rationing "unless this climate change reverses. . . . Almost a billion human beings starved to death in the last decade" (Ehrlich 53). After the world decides to use nuclear force against the Americans in retaliation for using methoxychlor-D, the story returns to the Gilsingers who have settled down at a farm just outside of Kansas. After an undefined period, it is the middle of summer and snowing, which leads George to speculate that "we've probably started an ice age spiral" (Ehrlich 60-61). For the Gilsingers—a placeholder for middle-class Americans—the ability to choose an alternative future is now completely lost, as the farmland (the new domestic space) is irretrievably irradiated. There is no hope in this dystopian end: there is now only the false choice of nuclear radiation poisoning or, as a last reprieve, death by cyanide (Ehrlich 60-61).

While Ehrlich shows how this environmental dystopia will affect even white middle-class Americans, he importantly constructs another storyline that warns that the environmental dystopia to come will disproportionately affect people of colour and the economically

disadvantaged. Paralleling the Gilsingers, Margaret Andrews and her son, Freddy, survive the nuclear attack and make their way to a farm, yet as a Black family from Washington, DC, their experience is further complicated by racial and economic injustice. The reader is told that Margaret's husband and Freddy's father, Richard, was murdered at a protest that pushed back against the "Population Control Law [that] was aimed at the blacks and the poor" because of "his refusal to knuckle under to the dominant white society and, especially, his feeling of community with the oppressed people of the Third World" (Ehrlich 54). Ehrlich adds that Richard's life was "snuffed out by a random bullet fired in the *worst civil disorder in the history of the United States,*" which would have drawn obvious parallels to the Civil Rights movement and the global unrest of the late 1960s (Ehrlich 54, emphasis added). Whereas the Gilsingers' journey to the farm is not mentioned, the scenario describes how the Andrewses are victims of classed and racial abuse as they make their way to safety. The narrator explains how the Andrewses were dependent upon and denied rations cards and that "even the privation of black Washington was nothing compared to the hunger and abuse she and Freddy had faced on the road" (Ehrlich 57). Although the story depicts Burrell's death in a nuclear attack and the Gilsingers' hopeless situation in the scenario's final pages, the final paragraph returns to Freddy Andrews who is working a plow just after his mother dies after a "twenty-year battle with radiation-induced illness" (Ehrlich 61). Like his mother, he appears to be the victim of radiation-induced illness, as he lives with the awareness that the lump in his armpit is growing, and "although he was uneducated, he knew its significance" (Ehrlich 61). However, he considers himself "lucky. He and Louise had a baby, and the baby had a chance. What more could a man ask?" (Ehrlich 61).

The conclusion of the scenario raises several questions about who might be responsible for and who will bear the brunt of this ecologically uninhabitable dystopian future. On one hand,

the conclusion potentially reinforces racist stereotypes about how racialized populations do not understand the importance of population control, as Freddy and Louise ‘populate’ even after ‘the end’ symbolized by the nuclear event. The Gilsingers’ anxieties about “hooligans” reaching the farm from Kansas City on the previous page can also be read in the context of suburban ‘white flight’ and middle-class anxieties about urbanization and racialized people (Ehrlich 59). On the other hand, this scenario seems to suggest that culpability for this dystopian future rests almost entirely with what is referred to earlier as “dominant white society” (Ehrlich 54), especially if we keep in mind Ehrlich’s persistent emphasis (inside and outside *The Population Bomb*) on white middle-class American consumerism as a major driver of the planet’s socioecological problems. In a literal sense, President Burrell’s choice to use chemical pesticides is directly responsible for the destruction of America, yet he is also a synecdoche for this “dominant white society” as its chief elected representative. He is portrayed as a self-interested buffoon who repeatedly refuses scientists’ expert opinions, much like Carson accused policymakers throughout *Silent Spring* of failing to heed the warnings of biologists about chemical pesticides. In this sense, the scenario frames “dominant white society” as responsible for reproducing what we can identify in the text as intergenerational environmental violence: not only is Freddy’s father murdered at a protest against oppressive and racist population laws, but Freddy is the victim of a slower kind of environmental violence as it is implied that he develops radiation-induced cancer from nuclear fallout (which, although simplifying, we can point to Burrell for ‘causing’). It seems to me that both interpretations of the scenario’s conclusion are valid, and while these interpretations are, admittedly, at least somewhat at odds, both seem to suggest that there is very little hope in this vision of the future, which is typical of the traditional dystopia associated with Orwell’s *Nineteen Eighty-Four*. Adopting the logic of the future anterior, Ehrlich warns that in this future it will

have been too late to change the decisions that leave the planet irrevocably damaged for future generations. If this is the case, descendants—like Freddy, Louise, and their child—may have to live with the burden that people in Ehrlich’s present bequeathed to them, which here amounts to the wry hope that a person will be “lucky” to live long enough to have a child.

Scenario Two: Ehrlich’s second scenario emphasizes the potentially catastrophic effects of a viral disease spreading across an increasingly interconnected and, from his perspective, overpopulated planet, which implicates many of the profound socioecological, economic, and political changes that I have discussed in this dissertation within the context of the Great Acceleration. This scenario places special emphasis on how wealth inequality functions as a crisis multiplier for ‘developing’ countries and people with marginalized economic and social statuses in the West. In this scenario, a fever initially localized to West Africa rapidly spreads across the globe, which a UN spokesperson explains was caused by a “combination of a very large, dense, generally poverty-stricken and hungry world population with rapid intercontinental transportation systems” (Ehrlich 67). Eerily prescient of what has occurred during the Covid-19 pandemic, the disease response in this scenario is unequal around the globe, as the disease’s effects are much worse in ‘UDCs’ than ‘ODCs’. The narrator explains that the “serum is generally unavailable in underdeveloped areas, and medical facilities have been swamped. U.N. agencies have been trying to distribute serum, but with little effect. Death rates range between 65 and 75%” (Ehrlich 69). Later, even as the disease spread slows and the response starts to improve, UDCs remain disproportionately affected (Ehrlich 71).

Although the second scenario is what Ehrlich refers to as “a sequence of hypothetical news items” rather than a story in the traditional sense, it nonetheless adopts dystopian narrative tools like extrapolation and the future anterior to construct a speculative account of what Ehrlich

warns might occur on a planet characterized by interconnection, wealth inequality, and overpopulation. By narrating this dystopian future through a series of news bulletins, the narrative is established as both metaempirical and as a highly realistic extrapolation from the present. It can extrapolate in a uniquely realistic way because it is an extension, in a literal sense, of Ehrlich's historical moment: "the first three news stories in this scenario are genuine; the rest are based upon them. A similar scenario could have been constructed around the 1967 Marburg-virus incident" (Ehrlich 62). The narrative arc of the disease's emergence, pandemic phase, and resolution is told through newspaper headlines and short descriptions, such as "EPIDEMIC IN MOZAMBIQUE. Tete (Reuters, August 23, 1973)," or "DISEASE IN TANZANIA. Dar es Salaam. (United Press, September 6, 1973)" (Ehrlich 64).⁵⁷ By drawing from real-life sources related to Lassa fever, Ehrlich imagines the spread of this disease to warn the audience—as we now know too well—that states are inadequately prepared to address a global health crisis, which is exacerbated by overpopulation, increasingly interconnected economies, and wealth inequality. His use of real-life events as a catalyst for the dystopia he imagines allows him, as Moylan describes the temporality of historicizing SF, to pursue "a more complex engagement that enters into a dialectical negotiation of the historical tension between what was, what is, and what is coming to be" (Moylan, *Scraps* 25).

While this is an undoubtedly grim and dystopian future—a loss of a billion lives, many of them children—it is also important to recall that "the entire purpose of the . . . scenarios was to stimulate the kind of action that would prevent events such as those described in the scenarios from occurring" (Killingsworth and Palmer, "Narrative" 40). Yet, unlike the first scenario, the

⁵⁷ The way that the narrative depicts a global problem by piecing together compiled sources from around the world resembles the bricolage method that John Brunner uses in *Stand on Zanzibar* (1968), which Heise discusses in detail in *Sense of Place and Sense of Planet* (2008), and which he claimed was essential in allowing him to present the entire world as his protagonist (Brunner, "Genesis" 36).

hope entailed in this speculative future extends beyond the critical function of cautionary warning associated with the traditional dystopia of Orwell, which positions the narrative closer to the critical dystopian impulse to hold out for a better future *within* the pages of the text. In scenario two, nations begin to form the types of international cooperative mechanisms that Ehrlich believes are necessary, despite the grim outlook that this only occurs because nations have witnessed the costs of inaction and are now prepared to do whatever it takes to prevent a similar event in the future. Ehrlich hopes for cooperation on international population and environmental issues, which entails addressing the kinds of material and discursive inequities between nations that he addresses at length in the book. Hope exists in this scenario because the mechanisms that are mobilized *after* the imagined crisis *already exist in Ehrlich's present*. So, while world leaders come together after the tragic events depicted in the story, Ehrlich suggests that there is no need to wait until *it will already have been too late*. From the perspective of the imagined future, we will have wished we acted sooner given *the existing options available*.

Adopting the future anterior, the narrative conveys that, unfortunately, it *was too late* to manage population growth, build resilience into the global economic system, and reduce dramatic wealth inequalities by the time nations finally acted—and that this was entirely preventable. “The assembled heads of state of 72 nations, including the U.S., China, the USSR, India, and most of Europe, together with delegates from the other nations[,]” made sweeping changes because “the lessons of overpopulation were clear for all to see” (Ehrlich 72). Eventually, a range of cooperative international actions were taken to resolve the socioecological drivers of the crisis, including “a representative commission . . . to make determinations of optimum populations for regions and for the world at a variety of standards of living, based on available resources and expected food production capability,” and the creation of a global “Environmental Agency . . . to

have control over all common features of the environment, including the oceans, the atmosphere, and international fresh waterways” (Ehrlich 72). The hope in this scenario is that these or similar actions coordinated in the wake of catastrophe might instead be undertaken in Ehrlich’s present: that there might be an international response that is representative of the planet’s people and is based on the collective recognition of the socioecological impacts of overpopulation, an increasingly global economic system, and political and economic wealth inequality, and that such policy changes will result in more stable environments and healthier populations that are more resilient to economic, climate, and public health scares. Even more hopeful is that the seeds of such change, for Ehrlich, are already in existence, as the narrator’s final remarks emphasize that “the hope was expressed that the U.N. might now develop into a genuinely powerful world regulatory body. As President Chai of the Security Council put it, ‘Men and nations have learned how dependent we all are upon one another and on the health of our little Spaceship Earth’” (Ehrlich 72).

Scenario Three: Unlike the traditional dystopia that opens *in medias res* (McManus 12) and remains claustrophobically closed off to hope within the text, the third scenario contains the critical dystopian impulse because it is written as a “condensed history written in the future” that looks back at a series of events *that will have occurred in the future* that result in the most comprehensive and hopeful changes of all three scenarios (Ehrlich 48). In this scenario, the promises of the Green Revolution have failed to materialize, while dramatic wealth inequality pushed the globe to the brink of disaster: by 1978,

The Green Revolution had succeeded in raising food production considerably for a few years but efforts to spread it to subsistence farmers in the poorest areas had failed. Increasing frequency and duration of local famines, and sudden declines in fishery

catches, combined with progressive difficulties in maintaining the flow of ‘necessary’ commodities toward the developed world, had driven the lesson home. (Ehrlich 73)

While the scenario opens with the mention of the collapse of ecosystems and famine, the major thrust of this condensed history is explaining how the worst possible scenarios, which were dramatized in scenarios one and two, were avoided. It would be disingenuous to omit the fact that while Ehrlich is hopeful that the worst can be avoided, this scenario still falls firmly within the boundaries of (critical) dystopia, as he acknowledges at the conclusion of this speculative future that although “this last scenario has considerably more appeal than the others, . . . it presumes the death by starvation of as many as a billion people” (Ehrlich 77). Nonetheless, this scenario concludes with roughly half a billion fewer deaths than scenario two (Ehrlich 71), and with the groundwork firmly established to usher in more equitable relationships between humans and between human societies and non-human nature. He does, additionally, directly address the reader in the concluding lines of this chapter: “I challenge you to create one more optimistic than the last” (Ehrlich 77). Here, the direct address resembles the critical dystopia in two significant ways: it acknowledges the public’s collective agency to imagine something better than the dystopian futures he presents; it also, importantly, refuses the closure of the traditional dystopia by encouraging dialogue about what (and how) alternatives to these bad futures are still possible.

Unlike the previous scenario’s adoption of the future anterior in the negative sense—if we do not act now, we will look back from the future and wish we had noticed the severity of the problem sooner—scenario three offers a history of how cooperative action aimed at addressing overpopulation, ecological degradation, and global wealth inequalities “was taken in a remarkably short time” (Ehrlich 73). In this sense, action will *not* have been taken too late to prevent the worst, as the narrator discusses how the world finally changed trajectory by looking

at imagined sources and debates from the future. Interestingly, the narrator explains that “historians have long argued over what the decisive factors were,” which suggests that Ehrlich (as I have argued throughout) did not assume that population was the sole cause of the planet’s socioecological problems (Ehrlich 74). For example, according to one “classic” source that Ehrlich’s narrator cites, fictional author Gilbert Foster’s *The Role of America in the Overdevelopment Crisis* (McGraw.. Hill, New York, 2017), “in essence, the Spaceman Morality jelled almost overnight. The trends which had begun late in the 1960s culminated in a revolution of new ideals late in the 1970s” (Ehrlich 75). Ehrlich’s use of imaginary texts to explain speculative historical shifts from the perspective of the future echoes Orwell’s ‘Goldstein’s Treatise’ in *Nineteen Eighty-Four*, as both Orwell and Ehrlich use imaginary texts to convey to readers how future intellectuals will make sense of the world of the future. The title of this “classic” text implies that scholars in the future will look back and recognize that the ecological crises of the past were driven by *overdevelopment*, rather than solely or even primarily by *overpopulation*. Here, the text also implies that Ehrlich was optimistic that massive shifts in how human beings live were possible within a decade. As is implied by “Spaceman Morality,” Ehrlich suggests that people in this speculative future have collectively realized the importance of sustainable living—treating the planet, which is our only home, less as an infinite sink of resources and more as a complex ecosystem that supports all human and non-human life.

Although Ehrlich is clearly concerned with population growth, his persistent emphasis on economic inequality and ecological sustainability in scenario three demonstrate his conviction that population growth is only part of the broader socioecological crisis he hopes to prevent. He provides clear examples of how American leadership on the world stage might contribute to long-term global planetary health, rather than continue to be the largest driver of the planet’s

economic and ecological problems, by juxtaposing fictional President Susan Freiberg with President Burrell. Unlike Burrell, who was ignorant to the importance of ecology and whose short-term thinking sacrificed environmental wellbeing for votes, President Freiberg symbolizes the changing of the guard as “the first woman president of the United States” whose “warnings against taking short-term gains in food production at the cost of long-term ecological destruction are believed ultimately to have saved an estimated two billion lives” (Ehrlich 76-77). For all the good that the United States might be capable of, however, Ehrlich believed that international cooperation and remedying economic inequality between nations was necessary to avoid a future that resembles scenarios one and two. The narrator explains that the first crucial move was dual-pronged: limit overconsumption in the West while providing resource export-based countries with financial protections against loss of income:

The [American] Agricultural Section of the Department of Natural Resources was instructed to purchase all food in storage beyond a one-year supply and make it available to the United Nations for distribution. Simultaneously, drastic restrictions were placed on imports of protein foods (fish, oilseeds, and nuts) from underdeveloped countries. To avoid loss of income to those poor nations, the United States guaranteed compensatory payments. (Ehrlich 73-74)

Here, Ehrlich echoes calls today by activists and Group of 77 nations who demand financial transfers, dedicated emergency resources, and climate reparations for centuries of unfair distributions of resources and national emissions contributions. The goals of international cooperation and wealth redistribution are reiterated in what can only be described as a revolutionary plan to redistribute global wealth and reduce socioeconomic inequality, which the narrator refers to as “the most important political statement in human history”:

The American Ambassador to the United Nations . . . proposed an International Survival Tax on the overdeveloped nations to be paid to UDCs largely through the United Nations. It was proposed that it should be graduated according to each country's per capita income. Below a per capita income of \$500, a country would become a recipient. The Ambassador announced that the United States would begin paying an IST tax of 4% of its Gross National Product annually. [. . .] One-half of the amount was assigned to the United Nations for disposal, the other half would be spent by the United States to run joint development programs in direct partnership with UDCs (Ehrlich 74).

According to the narrator, these plans to redistribute wealth and create bilateral programs between the United States and developing nations “[form] the basis of today’s World Commons Control System—the arrangement of international controls over *population, resources, and the environment* which all nations agree are moving us into a new era for humanity” (Ehrlich 75-76, emphasis added). Uncoincidentally, *Population, Resources, Environment* happens to be the exact title that Paul and Anne Ehrlich had desired for *The Population Bomb*,⁵⁸ and limiting population, redistributing and consuming fewer resources, and taking care of the environment are what Ehrlich believes to be the pillars of “a new era for humanity” (Ehrlich 76).

Hope: “What Needs to be Done” and “What Can You Do?”

While critics have argued that “Ehrlich believed there was a way to avert the total collapse of civilization: voluntary population control” (Smith 341), one-dimensional readings that focus solely on Ehrlich’s ideas about population and population control fail to take seriously the abundance of analysis and solutions that he provides for responding to the socioecological

⁵⁸ See footnote 37.

challenges that he warns readers about in the first half of the book. In fact, in addition to the glimpses of hope that Ehrlich presents in scenarios two and three, the final two sections of the book are aptly titled “What Needs to be Done” and “What Can You Do?”. These two sections, which are practically unchanged from the 1968 to 1971 editions, are packed with concrete ideas about *what needs to be done* and *what you can do* to help prevent the emergence of a dystopian future that resembles the scenarios. So far, I have discussed what he believes is necessary at the macro-level, which lends itself nicely to the dystopian form as it is inherently concerned with big questions about how societies are organized. I will conclude this reading by looking briefly at the smaller-scale, local, and hopeful forms of action that Ehrlich advocates for in *The Population Bomb*. The hopeful elements and concrete solutions contained within the pages of the text contribute to its critical dystopian core.

Despite his reputation as a prophet of doom, Ehrlich believed that concrete change was possible and that such change began at home in the United States. He explains that “the key to the whole business, in my opinion, is held by the United States. We are the most influential superpower; we are the richest nation in the world. At the same time we are also just one country on an ever-shrinking planet. . . . We, of course, cannot remain affluent and isolated” (Ehrlich 128). The problem, he suggests, is that the ‘American way of life’ requires unfair and unnecessary levels of consumption: “at the moment the United States uses about one-third of all the raw materials consumed each year. Think of it: less than 1/15th of the population of the world requires about five times its ‘fair share’ to maintain its inflated position” (Ehrlich 128). So, while he does suggest that part of the solution is “to establish and advertise drastic policies designed to bring our own population size under control,” this certainly does not paint a full picture of his recommendations (Ehrlich 130). Instead, and echoing Carson, he suggests that

major socioecological, political, and economic shifts must also occur—and are occurring—to establish more long-term, sustainable human/non-human nature relations.

Beyond limiting population growth globally and curbing consumption by affluent Westerners, Ehrlich was hopeful that a fundamental paradigm shift might occur that could change Western consumption habits and ideas about how human beings relate to non-human nature. Taking his cue from anti-establishment, anti-war, and anti-capitalist movements during the 1960s, he advocated for sexual and reproductive freedoms for all people, including “greater equality between the sexes, reliable contraceptives, and changing attitudes” toward gender roles, and made arguments for biocentrism and anti-materialism while criticizing ecologically harmful legacies of eurocentrism and anthropocentrism (Ehrlich 135). As a biologist, biocentrism seemed a fact of life to Ehrlich, who believed that “humanity . . . could not serve as the measure of all things. Humans needed to accept their proper role in a larger balance of nature on earth” (Sabin 8). In this sense, Ehrlich envisioned a desirable ecological future much in the same way as Carson: not maximizing consumption and manipulating non-human nature, but rather striking a balance between human societies and the non-human living things with whom we share the planet. Emphasizing this point, Ehrlich would subsequently add in the afterword to the 1971 text that “even with this growth of environmental awareness, most of the attention has been focused on human health aspects, which are only part of the story. The fundamental nature of the assaults that human beings and their ever-expanding economy place on the crucial life-support functions of ecological systems remains largely unrecognized” (Ehrlich 218). In this sense, when he states that “there is considerable reason for believing that extremely fundamental changes in our society are going to be required in order to preserve any semblance of the world we know,” he is not merely suggesting curbing population growth or levels of consumption (though it does

include this), but instead he is also warning that Western culture in particular needs to fundamentally rethink its material, ideological, and/or spiritual relationship to non-human nature.

Ehrlich's argument that the affluent in overdeveloped nations must fundamentally rethink the relationship between human beings and non-human nature is rooted in a critique of growth-oriented economic systems. He writes that "we've got to change from a growth-oriented, exploitative system to one focused on stability and conservation. Our entire system of orienting to nature must undergo a revolution" (Ehrlich 155). This is going to be "extremely difficult to pull off," he writes, "since the attitudes of Western culture toward nature are deeply rooted in Judeo-Christian tradition. Unlike people in many other cultures, we see man's basic role as that of dominating nature, rather than as living in harmony with it" (Ehrlich 155). Like some of the authors I have discussed so far, and especially like Le Guin to follow, Ehrlich identifies technoutopianism as belonging to the same troubling historical lineage as Cartesianism and other Western philosophical justifications for the domination of non-human nature: "science and technology can clearly be seen to have their historical roots in natural theology and the Christian dogma of man's rightful mastery over nature. Therefore . . . it is probably in vain that so many look to science and technology to solve our present ecological crisis" (Ehrlich 156). Rather than throw his hands up and suggest that we are doomed, his warning is accompanied by the assertion that "more basic changes are needed," including those advocated for in "the much-despised 'hippie' movement—a movement that adopts most of its religious ideas from the non-Christian East. It is a movement wrapped up in Zen Buddhism, love, and a disdain for material wealth. It is small wonder that our society is horrified at hippies' behavior—it goes against our most cherished ethical ideas" (Ehrlich 156). He suggests that the 'hippie movement' entails one such means of imagining alternatives to the dystopia he fears is on the horizon, as he implores his

readers to break with old traditions and be open-minded: “I think it would be well if those of us who are totally ensnared in the non-hip part of our culture paid a great deal of attention to the movement, rather than condemn it out of hand” (Ehrlich 156). For Ehrlich, hope can be found in alternatives to the status quo of seemingly endless growth, which echoes Vonnegut’s rejection in *Player Piano* of the belief that “the condition of man improves in direct ratio to the energy and devices for using energy put at his disposal” (Vonnegut 300). While the ‘hippies’ “may not have *the* answer,” Ehrlich writes, “they may have *an* answer. At the very least they are asking the proper questions” (Ehrlich 156, emphasis original).

Chapter III

Overpopulation Problems?

1. Introduction

Much as Rachel Carson, Paul Ehrlich, and the movements they inspired had borrowed rhetorical strategies from dystopian fiction for conveying the urgency of their socioecological warnings, authors of dystopian fiction during the 1960s and early 1970s were equally influenced by the emergence and eventual confluence of the modern environmental and anti-population growth movements. Dystopian fiction produced during the period was shaped by and waded into existing debates about the environment, which were often animated by population anxieties. As Ursula Heise explains, “in the environmental vision of the planet as it emerged in the 1960s and 1970s, few issues galvanized political debates as well as the cultural imagination as much as what was then referred to as ‘overpopulation’” (Heise 68). Importantly, as I showed in Chapter Two, concerns about overpopulation were often framed in terms of what type of future rapid increases in human population growth might forbode, which many speculated “might lead to unprecedented environmental devastation and human misery” (Heise 68). However, as I also explained, some factions within the anti-population growth movement appeared to have more sinister motivations for wanting to limit human population growth, including the desires to maintain American geopolitical supremacy abroad amid perceived threats from international communism and to preserve largely white middle-class standards of living at home. In this context, debates about human population growth resulted in disagreements about whether or not “problems of resource shortages” justified “the necessity of ‘population control,’” or if the goal of slowing population growth globally was simply an expression of Western neocolonial power

that sought to secure fundamentally disproportionate and unsustainable levels of consumption in overdeveloped Western nations (Heise 69). The dystopian novels that I read in this chapter are explicitly responsive to these ongoing conversations and, like Ehrlich, grapple with what I perceive to be the core question: “whether looming scarcity crises and environmental devastation were caused principally by rampant population growth in the developing world or by rampant increases in consumption in the developed world” (Heise 69).

In the context of these popular concerns and debates, critics agree that by the 1960s “the spectre of world overpopulation was beginning to filter seriously into dystopian fiction” (Claeys, *DANH* 461), yet surprisingly little critical research exists on overpopulation dystopias, and even less research exists on the confluence of the modern environmental movement and the anti-population growth movement in dystopian fiction of the period.⁵⁹ In a recent study (2021), John Hickman and Jonathon Parker write that, “given the affective response to such existential threats, it is surprising that more fiction writers have not explored themes involving the catastrophic collapse or growth of populations. However, recent trends in research have begun to classify the (relatively few) examples of this subgenre” (Hickman and Parker 227). In this chapter, I explore how Harry Harrison’s *Make Room! Make Room!* (1966), John Brunner’s *Stand on Zanzibar* (1968), and Ursula Le Guin’s *The Lathe of Heaven* (1971) engaged in the widespread debates related to the modern environmental and anti-population growth movements that I discussed in Chapter Two. I believe that this can offer a historically and environmentally nuanced dimension to existing critical conversations about what critics have called “demodystopian fiction” or

⁵⁹ John Hickman and Jonathan Parker suggest that science fiction in general during the period displayed an awareness of demographic concerns that was much aligned with professional demography: “population experts and policymakers were concerned with depopulation from 1880 to 1945 and then alarmed by overpopulation from 1945 to 1975,” and “science fiction writers were adjusting to these demographic shifts at about the same time as population professionals” (Hickman and Parker 211, 212).

“fertility dystopias” (Domingo, “Demodystopias” 725; Hickman and Parker 206). Aided by insights from Marxist ecology, Critical Theory, and the Environmental Humanities, my historical perspective will offer an alternative to two related tendencies in the existing genre criticism, which I will discuss in detail shortly. The first issue with some of the existing criticism on population anxieties in dystopian fiction is that it adopts an ahistorical perspective of the relationship between population and the genre. It does this by generalizing that population concerns are central to the genre because of an inherent tension between groups and individuals. A related but more common assumption in the existing criticism is the tendency to treat population growth anxieties as merely a symptom for other issues related to colonialism and xenophobia, massification and declining standards of living, and repressive sex/gender relations. While these issues *are relevant* to the dystopian fiction produced during this period—indeed, these issues are likely to be relevant to *all fiction* produced in *any period*—these interpretations do not sufficiently grasp that for writers during this period anxieties about overpopulation were linked to historically specific socioecological concerns such as the rapid expansion of global capitalism, the rise of consumerism and corporatism, the spectre of energy shortages, the affective and embodied sense of mass urbanization, the spread of urban sprawl and the disappearance of traditionally ‘natural’ spaces, and widespread pollution.

The historically specific ecological contents of Harrison’s, Brunner’s, and Le Guin’s novels are central to this dissertation’s goal of providing a much-needed environmental history of dystopian fiction produced during the first few decades of the postwar period. Much of the existing criticism on overpopulation fiction of the 1960s and 1970s fails to adequately capture the extent to which authors of dystopian fiction used the discourse of overpopulation not just to express anxieties about population growth and its associated ills, but to critically engage with

arguments emerging from the modern environmental movement about the pitfalls of Western consumerism, energy waste, and anthropocentric and instrumentalist orientations toward non-human nature. Each of the texts that I analyze in this chapter engage in contemporaneous debates about overpopulation and environmental degradation in unique ways by foregrounding questions about ecological limits, suggesting that scarcity and environmental degradation are caused by some human beings' socioecologically damaging interactions with non-human nature, excessive consumption, and use of energy. While these novels *do* display anxieties regarding overpopulation, I argue that each of these novels draws from contemporary environmental discourses to problematize the idea that population growth is solely or even primarily to blame for contemporary social, political, and environmental problems, and to suggest that limiting the human population is not the best use of our collective political energies.

Harry Harrison's *Make Room! Make Room!* (1966) depicts neo-Malthusian anxieties typical of the mid-1960s, suggesting that overpopulation will lead to scarcity, crime, and violence, yet the novel also resists a one-dimensional reading by conveying an awareness of the historical drivers of ecological degradation that go beyond the narrow scope of population growth. The novel is more than straightforwardly neo-Malthusian because it presents the historical, political, and economic causes of social and environmental instability in Harrison's future New York City not as an inevitable by-product of population growth, but rather as problems that have been steadily growing over centuries because of greed, poor political planning, and exploitative relationships between Euro-American settlers and non-human nature. In this sense, the water and food crises at the centre of the narrative are neither solely social nor solely environmental problems, but instead are socioecological examples of what Marxist ecologists John Bellamy Foster, Brett Clark, and Richard York refer to as "ecological rift[s]":

environmental manifestations of a “deep chasm” in the “metabolic relation between human beings and nature” (Foster, Clark, and York 7). In this way, Harrison complicates the contemporary neo-Malthusian assumption that population growth is the primary driver of social conflict and ecological degradation, which means that the novel does not present limiting population growth as a panacea to the problems it depicts.

Like Harrison’s novel, John Brunner’s *Stand on Zanzibar* (1968) wades into contemporaneous debates about population growth and environmental degradation, yet Brunner’s dystopian future provides a more planetary perspective by showing how problems commonly attributed to overpopulation are actually caused by capitalism’s global spread, the predatory nature of neocolonial financial arrangements, and corporate domination and consumerism. The novel’s documentary style and use of collage allow Brunner to depict a planetary capitalist ecology that is shaped by corporate capitalism and neocolonialism, which the novel shows to be responsible for the socioecological problems of dramatic wealth inequality and environmental deterioration. By consciously crafting a narrative in which “the protagonist of [the] book” is “the entire world,” he shows how global capitalism blurs the lines between human societies and non-human nature (Brunner, “Genesis” 36). In this way, the novel anticipates David Harvey’s argument that “capital *is* a working and evolving ecological system” (Harvey 247, emphasis original). Moreover, the novel’s depiction of how uneven development within the global capitalist system produces socioeconomic inequality *within* and *between* nations suggests that Brunner disagrees with scarcity-based arguments that claim the world contains insufficient resources to provide for everyone. Instead, the book shows that Western patterns of consumption reproduce inequality, scarcity, *and* environmental degradation. He engages with contemporary environmental and anti-population growth discourses by critiquing and often satirizing

anthropocentric and instrumentalist responses to intersecting political, economic, and socioecological problems, which is a prescient warning in 1968 that ‘advanced’ capitalist nations were all too willing to place their faith in technology and leave our collective future in the hands of corporations. With this in mind, I argue that the novel frames the American-led neocolonial project to ‘develop’ the fictional African country of Beninia and the global eugenics race to see which nation will be the first to produce a genetically pure national body politic as misguided projects that attempt to maintain Western socioeconomic supremacy without addressing the negative socioecological effects of neocolonialism, corporate capitalism, and consumerism.

The final dystopian novel that I close read in this dissertation is Le Guin’s *The Lathe of Heaven* (1971), which is regarded as the first dystopian novel to openly discuss anthropogenic global warming (Trexler 8; Goodbody and Johns-Putra 3) and marks the beginning of what critics view as dystopian fiction’s environmental turn in the early 1970s (Claeys, *DANH* 447). In this sense, her novel makes explicit the socioecological concerns that have always been implicit in dystopian fiction’s more typically ‘Orwellian’ themes. Like the other two novels I read in this chapter, Le Guin’s novel conveys a nuanced understanding of popular debates about population growth, and cautions against the oversimplifying discourse of overpopulation by calling more explicitly for a shift in how Western consumer societies think about and interact with non-human nature. The novel’s multiple dream futures and dialogical structure encourage debate about contemporaneous socioecological issues and parallels how Carson and Ehrlich often directly addressed their readers in *Silent Spring* (1962) and *The Population Bomb* (1968) to include the public in debates about industrial capitalist profiteering, pesticide use, population growth, and overconsumption. Echoing Theodor Adorno, Max Horkheimer, and Herbert Marcuse, and anticipating current Marxist ecology and Energy and Environmental Humanities scholars, the

novel warns that social, political, and environmental problems are interrelated, which means that they cannot be fixed with narrow techno-scientific solutions that are too often instrumentalist, anthropocentric, and totalitarian. In this context, I argue that Le Guin advocates for an ecocentric view of humankind's relationship with non-human nature that is premised upon an avowed anti-anthropocentrism and anti-instrumentalism.

2. Critical Contexts: Population and Dystopias

Existing criticism that focuses on overpopulation in dystopian fiction has emphasized that demographic concerns are inherent to the genre, which appears to have had the unfortunate consequence of preventing these critical conversations from engaging with historically specific environmental concerns. For example, a key claim in Gregory Claeys's *Dystopia: A Natural History* (2017) is that a complex psychological dynamic between groups and individuals is at the core of dystopian fiction, which can be understood as a delicate balance between freedom and oppression.⁶⁰ For Claeys, population dynamics are central to what he refers to as the "collectivist dystopia," which "assumes two main forms: the internal, where coercion pervades the privileged main group; and the external, where coercion defines the relationship to outsiders as a means of upholding the main group, who are, however, free of most of the repression inflicted upon outsiders" (Claeys, *DANH* 8). This complex interaction between individuals and groups can be applied transhistorically as a heuristic for interpreting topics as far ranging as fictional utopias like Sir Thomas More's *Utopia* (1516) to real-life dystopias like life under Stalinism (Claeys, *DANH* 8). Antonis Balasopoulos, one of the major theorists of population dystopias, also argues

⁶⁰ For example, he writes: "To place groups at the centre of our analysis as such is to recognize the proximity of some types of utopia to some types of dystopia. Both utopia and dystopia conceive of ideal harmonious groups which privilege close connections between individuals and the unity and interdependence they exhibit. A key question here is how inclusive or exclusive this exchange of benefits is" (Claeys, *DANH* 7-8).

that dystopias are inherently concerned with demographics, which he claims can be traced back to an inherited trait from its parent genre, *utopia*. Since More's *Utopia*, Balasopoulos argues, "the question of forcibly displaced and economically 'surplused' populations" has been passed down through the ages, existing as a key ingredient in utopia's descendent genres—genres which "are, at a certain level of meaning production, *fictions of population*[:] of its miseries, its hidden potentialities, its amenability to reorganization along the lines of humane reason and productive efficiency" (Balasopoulos 618, emphasis added).

Other critics have focused on overpopulation dystopias in the context of the postwar period, yet they have fared little better in identifying how these texts were responsive to the rich exchange between the anti-population growth and modern environmental movements. One of the first scholars to argue that population dystopias should be recognized as a subgenre of dystopian fiction, Lionel Shriver argues that dystopian population fiction in the 1960s marks a shift from earlier SF dystopias that were concerned primarily with *population decline* resulting from war, nuclear holocaust, and pestilence. However, Shriver's interesting work has limited applications for scholars concerned with the historical connections between the anti-population growth and modern environmental movements, as she suggests that population anxieties were simply a cover for political and economic anxieties (i.e., for more 'Orwellian' themes). She argues that the "whole class of population pulp novels that took off in the 1960s, powered by Ehrlich-style alarmism," were animated by fears about the degradation of the liberal individual in the face of swelling populations: "In swarming dystopias, civil liberties erode, and small, protected elites often control the seething horde through fascistic or mechanistic means. Drab, mass-produced garments portray a loss of individuality, as the one is lost in a sea of the many" (Shriver 158). Where Shriver does acknowledge the possibility that overpopulation dystopias might express

legitimate environmental concerns—“‘demografiction’ can animate the humanitarian truism that biologically we all sink or swim together. This collective existential ambivalence helps to express the dichotomy that other people are at once resource and rival”—this is undermined by the suggestion that “demography is a lightning rod for literary reservations about humanity itself, which can appear repulsive in sufficient quality” (Shriver 160). This implies that ‘human nature’ or human beings in the abstract are the problem, which ignores the extent to which overpopulation anxieties were bound up with the very specific and identifiable socioecological problems that popular science authors like Carson and Ehrlich popularized in the 1960s (Shriver 160). In other words, while population anxieties *were* undoubtedly bound up with economic fears associated with liberal individualism (such as how resource scarcity might erode middle-class standards of living), they are not entirely reducible to these anxieties.

Andreu Domingo, arguably the foremost critic of dystopian population fiction, builds on Shriver’s work and coined the term “demodystopian fiction” to refer to texts that “appeared in the years after World War II, when the evolution of the population and changing demographics were seen by many as ‘negative tendencies’” (Domingo, “Demodystopias” 725). While his analysis commendably historicizes population anxieties in postwar dystopian fiction, it fails to acknowledge how central environmental issues were to speculative representations of overpopulated futures during the period. Like the critics discussed so far, Domingo grounds his theorization of demodystopias in relation to anxieties about population management and massification, which he identifies in eugenics movements during the first half of the twentieth century. A fear of the masses, he explains, is present in the novels of the genre’s most defining authors, like “George Orwell and Ray Bradbury, . . . [who] seemed to see the emergence of the masses as threatening their own roles as writers and as members of an intellectual elite. [. . .] In

an analogous way, this eugenic fear of being swallowed by the masses . . . helped to give rise to the demodystopias” (Domingo, “Demodystopias” 728). Unlike the dystopian novels of Orwell and Bradbury, he explains, 1960s demodystopias expressed fears “of losing work, of impoverishment, of downward mobility, [but] not of the authoritarianism that sustains the regime” (Domingo, “Demodystopias” 730). In this sense, he follows Shriver in suggesting that economic issues like poverty and the fear “of being absorbed into the masses, of being confused with them,” dominate these dystopian futures (Domingo, “Demodystopias” 730). Unfortunately, like Shriver, he does not discuss 1960s demodystopias in relation to contemporaneous environmental anxieties, but instead he suggests that they adopt “Malthusian orthodoxy” as “dystopias that play on and heighten the fear of population explosion” (Domingo, “Demodystopias” 731). For these texts, as for Malthusian orthodoxy, “scarcity is not a problem of production and distribution of goods, but a simple consequence of too many people” (Domingo, “Demodystopias” 731). Shriver and Domingo’s shared emphasis on demodystopias of this period as essentially conveying anxieties about Western middle-class standards of living does not acknowledge how ‘demographic’ fears overlapped with broader environmental anxieties, including widespread concerns about chemical pesticides, overconsumption, and pollution. Put otherwise, Shriver and Domingo fail to account for how anxieties about the liberal individual’s economic security in demodystopias were influenced by the growing environmental awareness in the 1960s that Western middle-class levels of consumption are fundamentally unsustainable on a global scale. In contrast, I will show that all of the “demodystopian” novels that I read in this chapter demonstrate that demographics (overpopulation), standards of living (overconsumption), and ecological degradation are not so easily pried apart.

Most recently, Hickman and Parker's essay "An Overabundance of Population Panics: A Rough Periodization of 'Fertility Dystopias'" (2021) introduces a new term to the critical vocabulary on population dystopias: the *fertility dystopia*. They define fertility dystopias as "literary examples of the rapid expansion or collapse of populations through the manipulation of fertility or the fraught inability or decision not to" (Hickman and Parker 206). Like all dystopias, fertility dystopias are a form of "cautionary pedagogy" (Thaler 91), but these novels *specifically* "amplify . . . anxieties about population not only to entertain readers but also to persuade them of the risks of overpopulation or population collapse" (Hickman and Parker 207). Their analysis builds on Domingo's work, yet they narrow the scope of demodystopias to no longer include stories where "'plagues and other catastrophes' adversely affect the total population," and instead they focus solely on "fictions that focus on fertility (esp. rates and controls) and population size" (Hickman and Parker 227). Their framework offers promise as a way to better understand the nuanced shifts in dystopian fiction during the postwar period, such as how population management anxieties might present uniquely in feminist dystopias written during the 1970s and 1980s, yet their method has clear limitations from an environmental perspective. If their goal is to "expos[e] parallels between the thinking of fertility dystopia fiction writers and population control professionals," it seems counterintuitive to bracket out environmental concerns, excluding from their study "stories . . . in which concerns about fertility emerge as secondary to larger environmental catastrophes (i.e., climate change)" (Hickman and Parker 207). By limiting their scope, their method overlooks how debates about fertility in the postwar period were deeply influenced and structured by conversations about consumerism, economic development, and environmental degradation. These connections were often drawn by scientists, statespersons, policymakers, and activists who shaped population debates during the 1960s and

1970s, as I showed in Chapter Two. Ehrlich, for example, drew connections between fertility, consumerism, and ecological degradation, as he exhorted readers to understand that “each American baby will consume in a 70-year life span, directly or indirectly: 26 million gallons of water, 21 thousand gallons of gasoline, 10 thousand pounds of meat, 28 thousand pounds of milk and cream, \$5,000 to \$8,000 in school building materials, \$6,300 worth of clothing, and \$7,000 worth of furniture. It’s not a baby, it’s Superconsumer!” (Ehrlich 140-141).

In all of these ways, much of the existing criticism on overpopulation fiction of the 1960s and 1970s fails to adequately capture the extent to which authors of dystopian fiction in the 1960s and early 1970s used the discourse of overpopulation to critically engage with widespread environmental anxieties and debates. The existing criticism tends to conceptualize literary representations of overpopulation as a metaphor for more universal political and/or philosophical concerns about human nature, or often ignores the historical specificity of the environmental anxieties of this period altogether by assuming that concerns about population have been central to the genre since its inception. In some cases, when population anxieties have been considered in their proper historical context, critical interpretations have still ignored relevant environmental issues and/or reduced overpopulation anxieties to straightforward Malthusian orthodoxy. I argue, however, that each of the texts that I read in this chapter reflect the rich exchange between the anti-population growth and the modern environmental movements that occurred during the early years of the postwar Great Acceleration. Harrison’s, Brunner’s, and Le Guin’s dystopian futures show clear connections between socioecological issues related to population growth, energy consumption, consumerism, scarcity, technological dependence, and humankind’s increasingly outsized impact on non-human nature. While all these novels undeniably display anxieties regarding overpopulation, they draw from contemporary environmental discourses to

problematize the idea that swelling populations are necessarily responsible for the dystopian futures imagined. In this way, each of these novels complicates what may otherwise appear to be straightforward arguments in favour of limiting population growth as the best use of our collective political energies.

3. Harry Harrison's *Make Room! Make Room!* (1966)

Like many authors of the period, Harry Harrison was engaged in the ongoing public debates about population growth and the state of the environment. *Make Room! Make Room!* (1966) depicts neo-Malthusian anxieties stereotypical of the mid-1960s: overpopulation has led to scarcity, crime, violence, and widespread moral decay in future New York City. As critics have also suggested, the novel conveys middle-class anxieties regarding the dissolution of the liberal individual at the hands of the encroaching masses. Harrison's novel, however, is more than a straightforward neo-Malthusian warning. In the first section of this analysis, I show how Harrison's novel appears to support a standard neo-Malthusian reading by discussing the novel's fears of moral and social decay, and by unpacking the extended dialogues between Sol and Shirl on population growth, population management, and death control. In the second section, I argue that while population growth is frequently cited as the sole driver of political and social unrest in the novel, a closer reading shows that the problems plaguing future New York City are not caused by population pressures alone, but also—and primarily—by a history of exploitative settler/non-human nature relations, overconsumption, and short-sighted economic and political policies, including extractivism and the mismanagement of natural resources. My reading of Harrison's novel is divided in two in order to demonstrate that what might appear to be straightforward neo-Malthusian warnings are actually deeply indebted to discourses related to

the modern environmental movement, which I argue is clear in the novel's persistent references to energy and resource consumption, personal consumption and wastefulness, and human caused changes in the climate. In this context, I argue that critics have not adequately considered the extent to which Harrison complicates the neo-Malthusian assumption that solving the 'population problem' is a silver bullet to interlocking social, political, and ecological issues.

Criticism

Critics have noted that Harrison's novel was part of a growing trend in SF towards dystopian representations of overpopulation in the 1960s,⁶¹ which often conveyed overcrowding as an affective, bodily experience of discomfort, unease, and/or deprivation. For Claeys, *Make Room! Make Room!* appears almost singularly focused on depicting the effects of overpopulation on the novel's characters. In this way, Harrison warns about overpopulation by communicating the daily miseries of what life could be like in a vastly overpopulated future New York City, which in his imagined future contains roughly 35 million people, many of whom "live a hand-to-mouth existence on welfare. Dogs are eaten. . . . Most of the novel focuses on individual characters coping with such circumstances. But as the book progresses the shortages worsen. Hungry mobs begin to riot" (Claeys, *DANH* 462). Like Claeys, Brian Ireland argues that *Make Room! Make Room!* makes use of neo-Malthusian fears about scarcity and declining standards of living. Yet, unlike Claeys, Ireland argues that Harrison's novel was part of a broader trend in postwar SF that was "dominated by innovative and socially aware narratives and informed by scientific and social-science disciplines," and as such emphasized how an overpopulated future would exacerbate existing wealth inequalities (Ireland 142). However, while Ireland deserves

⁶¹ Heise observes this trend, writing that "overpopulation had begun to make occasional appearances in the 1950s," yet "it only became a major theme in science fiction in the 1960s, inspiring a whole series of novels" (Heise 71).

credit for pointing out how overpopulation disproportionately affects the poor in Harrison's novel—"for the majority on welfare, all aspects of everyday life are a struggle. Oil supplies are depleted, meaning privately owned cars are for the very rich only"—his reading nevertheless implies that overconsumption is a product of overpopulation (Ireland 153). While overconsumption *is* related to overpopulation in a simple sense, I will argue shortly that this is an oversimplification that Harrison's novel acknowledges at various points when characters remark that the current socioecological breakdown has resulted from centuries of wasteful natural resource usage. Though Ireland does not discuss *Make Room! Make Room!* in the context of the modern environmental movement, he does claim that "humankind's" cumulative impacts are central to the novel's warning. It was the growing realization of "humankind's" awe and terror-inspiring powers, he argues, that implored Harrison to write *Make Room! Make Room!*, as it "was dawning on some Americans that the choices they made in the present might have a huge impact on humanity's future" (Ireland 148). This realization, as I argued in Chapter One, has its origins in the creation of nuclear bombs, which "ushered in a new age of anxiety about humanity's capacity to destroy itself and its environment" (Ireland 143).

In agreement with Claeys and Ireland, Michael Smith notes that Harrison's novel depicts overpopulation as "a quality-of-life problem," yet Smith emphasizes that the novel was primarily a warning about attempting to overcome ecological limits to population growth through technological solutions (Smith 345). In this context, he proposes that in "Harrison's near future the law of diminishing returns has played itself out: the green revolution has proved to be an ephemeral solution to world hunger" (Smith 345). For Smith, the novel warns that there are simply *too many people*: "pollution and overexploitation have exhausted the seas as a source of food; air pollution has made New York's air almost unbreathable; and global warming has raised

the level of the oceans and transformed the northeastern United States into a subtropical climate” (Smith 345). While he productively identifies ecological anxieties in the novel, I do not agree with his suggestion that Harrison’s warning is essentially neo-Malthusian in its “turn[ing] the Pollyannaish optimism of late sixties’ and early seventies’ population crisis naysayers on its head” (Smith 345). In this sense, though he points out the ecological elements in the novel, Smith misses the novel’s discussion of the historical drivers of ecological degradation *that are unrelated to population growth* by assuming that the novel’s environmental problems are simply a product of too many people. In contrast, I begin this reading by proposing that Harrison’s novel, on one hand, *can* be read for its neo-Malthusian content; however, and on the other hand, I will demonstrate that Harrison’s novel, much like Ehrlich’s *The Population Bomb*, is committed to showing how the socioecological crisis it warns about is the result of preventable historical, political, and economic forces, and *is not reducible to population dynamics alone*.

Part One: Harrison the Neo-Malthusian

Arguably the most well-known fictional treatment of overpopulation, Harrison’s dystopian novel *Make Room! Make Room!* is set in 1999 when future New York City is on the brink of collapse as roughly 35 million people struggle to survive amid urban crowding, violence, and food and water shortages. The plot follows detective Andy Rusch in his search for a killer, while offering glimpses into his personal and romantic relationships that suffer because of conditions stemming from overpopulation. Andy, the novel’s protagonist, is in his thirties and has a passingly successful career, yet he is unable to afford his own apartment, so he shares a room with an older man named Sol, whose role in the novel is to serve as the living memory of the times before overpopulation (thus he is an able barometer of how much things have

changed—a frequent element in dystopian fiction). As the detective plot unfolds, the reader is exposed to the horrors of life in this vastly overpopulated dystopian vision of New York. The depiction of neo-Malthusian concerns in the novel can be organized into three categories: crowding, crime and moral decay, and scarcity.

This first category, crowding, is perhaps the most obvious starting point for a neo-Malthusian reading of *Make Room! Make Room!*, as the novel depicts numerous crowded stoops and doorways, mass homelessness, shared apartments, and packed public markets and squares (as is alluded to by the title). In the prologue to the novel, the narrator explains that, “unable to expand outward, Manhattan has writhed upward . . . rising higher and still higher—yet never high enough, for there seems to be no limit to the people crowding here. . . [T]his city is populated as no other city has ever been in the history of the world” (Harrison 11). Harrison evokes the same sense of creative destruction⁶² that I noted in relation to energy infrastructure replacing infrastructure related to the arts and culture in Kurt Vonnegut’s *Player Piano* (1952), but here population growth and the infrastructure required to sustain it are framed as cannibalistic: “feeding on its own flesh as it tears down the old buildings to replace them with the new” (Harrison 12). Throughout the novel, the crowded city slowly descends into chaos when food, water, and shelter become increasingly scarce; crowds become tinderboxes of dissent, frustration, and violence. Anger builds in the novel among the city’s poor inhabitants as “New York City trembled on the brink of disaster. Every locked warehouse was a nucleus of dissent, surrounded by crowds who were hungry and afraid and searching for someone to blame. Their anger incited them to riot, and the food riots turned to water riots and then to looting, wherever this was possible” (Harrison 211). Often, the novel’s depictions of a crowded, dirty,

⁶² Harvey writes that term ‘creative destruction’ captures how “ways of life and modes of being and thinking have to drastically alter to embrace the new at the expense of the old” (Harvey 98).

and violent New York City translate into anxieties about liberal individual property rights, which is most clear in the dispute between Andy and the Belicher family over access to his apartment.

By evoking ‘squat-orders,’ Harrison dramatizes what would have been unimaginable for his contemporary readers: the absence not only of private space, but of private property rights, as the Belicher family *legally* ‘invades’ Andy’s home. A bodyguard in the former employ of Andy’s love interest, Shirl, arrives at his apartment with the Belicher family. A dirty, obnoxious, and inconsiderate bunch, the Belichers arrive immediately after Sol’s death to lay claim to the space occupied by his half of the room. The bodyguard, Tab, explains to Andy and Shirl that “a squat-order is issued by the court to anyone who can prove they are really in need of a place to live. . . . With a squat-order you can look around and find a vacant apartment or room or anything like that, and the order is a sort of search warrant” (Harrison 259). The tension and anxiety crests as Andy assents to the law and the Belichers are permitted into his apartment. They run amok, as the narrator describes the family disparagingly: “Mrs. Belicher was the support of the family; from the flabby fat of her body came the children, all seven of them, to swell the Relief allotment on which they survived. Number eight as pushing an extra bulge out of the dough of her flesh; it was really number eleven since three of the younger Belichers had perished through indifference or accident” (Harrison 259). The narrator frames overpopulation as a burden on existing social infrastructure (relief allotment), while also depicting the poor as a grotesque reproductive mass. In this way, overpopulation fears are clearly linked with anxieties about class (contamination) and massification. Harrison links an affective experience of overpopulation with the fear that the legal institutions and foundations of liberal political economy (property rights) will buckle under the weight of overpopulation. Shirl cannot cope with these new living conditions and moves out, leaving Andy paradoxically alone, yet without

even basic privacy (Harrison 264). The novel, in other words, shows how urban crowding can produce an opposite effect: atomization. Heise argues that this paradoxical sense of dislocation from local community despite “forcible confinement to the local” is common in overpopulation fiction: “the individual is squeezed into too tight a place to allow for any attachments to either the local or beyond. Reduced to its most minimal conception, the ‘local’ here encourages fear of intrusion rather than the formation of community” (Heise 75-76).

Harrison’s *Make Room! Make Room!* also conveys neo-Malthusian anxieties in its depiction of crime and declining state capacity. As I explained in Chapter Two, Thomas Malthus “had little faith . . . in human beings, especially poor people,” and he believed “the poor had no one to blame for their poverty but themselves” (Robertson 4). Malthus speculated that the combination of resource scarcity and the poor’s lack of discipline and moral restraint would make crime inevitable. Thomas Robertson argues that a deeply rooted frontier mentality in American consciousness primed Harrison’s audience for Malthusian tropes of scarcity-led moral depravity, as “more so than anything else . . . a history of abundance defined Americanness. Yet, because Americans depended so heavily, both materially and culturally, on abundant resources, the threat of shortages sometimes loomed large in their imaginations” (Robertson 5). *Make Room! Make Room!* depicts the connections between overpopulation, scarcity, and crime as the novel charts Andy’s attempt to track down the killer of a local gangster named Mike O’Brien. Importantly, the murderer is not a hardened criminal, but an otherwise normal kid, Billy Chung, who unintentionally murders O’Brien after venturing into a wealthy part of the city as part of a temporary work assignment. Prior to the murder, Billy is portrayed as an average kid in desperate need of food and money who lives with his family in a makeshift dwelling down at the docks. At the very least, the novel’s generally sympathetic portrayal of Billy complicates an

otherwise straightforward interpretation of the book's representation of poor people as a vulgar mass (like the Belichers). While the plot evolves through Andy's tracking Billy down, the Malthusian anxieties of crime and moral depravity emerge in a conversation between Andy and Shirl, who he first meets at the crime scene. The increases in crime and scarcity are linked here as he explains to her that the police department is incapable of staying abreast of increases in crime given their low budget. Future New York City has descended into chaos and lawlessness. Andy explains to Shirl,

Look. There are five, maybe ten killings in New York every day, a couple of hundred felonious assaults, twenty, thirty cases of rape, at least fifteen hundred burglaries. The police are understaffed and overworked. . . . This city has a million punks who are on the Welfare and wish they had a square meal or a TV or a drink. So they try their hand at burglary to see what they can pick up. . . . If the burglar is armed there may be a killing. Completely by accident, you understand. (Harrison 92-93)

For Andy, the problem is a lack of adequate resources to cope with the ever-expanding, desperate population: a surplus of population causes a deficit in state capacity. By posing a figure so exorbitant as 1500 daily burglaries and remarking that "this city has a million punks who are on the Welfare and wish they had a square meal or a TV or a drink," Andy implies that the city is inundated by crimes of necessity (Harrison 92-93). The link between population, scarcity, crime, and deficient state capacities is emphasized throughout the novel at key points when riots occur in response to frequent food, water, and welfare shortages, as the police commissioner later in the novel warns Andy and his colleagues that "there's going to be a couple of hundred—or maybe a couple of thousand—people killed in this city by tonight [. . .]. When you go out of here

you better realize that there are going to be riots and trouble today [. . .]. The Welfare stations won't open today and there won't be any food issued for at least three days" (Harrison 198).

Harrison connects overpopulation, scarcity, and crime with the loss of various pleasures, comforts, and commodities. Domingo has recently (2019) argued that demographic fiction tends to play on the trope of redundant populations, whose deprivation results from their status as "failed consumers" who "reveal the transformation of poverty from a more or less transitory state to a permanent category" (Domingo, "Evil" 447). In Harrison's future, even 'middle-class' people like Andy—to say nothing of the unhomed and unemployed masses—live in an almost constant state of indigence that is reminiscent of the living conditions for most people in Orwell's *Nineteen Eighty-Four*. A theme shared by all the novels I will discuss in this chapter, the car economy in *Make Room! Make Room!* has collapsed, which has long been conceptualized as a symbol of freedom in Western (especially American) cultural consciousness. Anxieties about population growth merge with fears about the scarcity of energy in the future. In future New York, cars were simply "a historical—and therefore uninteresting—fact," and since "operating automobiles became rarer, there was no longer a need for the hundreds of parking lots scattered about the city" (Harrison 234). Instead, cars litter the landscape as decaying husks of a previous era of energy affluence and become semi-permanent homes for the excluded populations who live semi-nomadic lifestyles, moving from shelter to shelter to escape violence on the streets and winter storms. Fights over these makeshift shelters often become violent, as what were once symbols of freedom and mobility have ironically become spaces of confinement that signal the collapse of American affluence and the scarcity of energy in the future.

All of the neo-Malthusian concerns discussed above—crowding, scarcity, declining state capacity, and violence—culminate in extensive conversations in the novel between Shirl and Sol

where the links between birth control and death control are clearly stated. These conversations anticipate birth control advocacy in texts like Ehrlich's *The Population Bomb* and demonstrate the inherent links between pesticides use and population growth.⁶³ Shortly before Sol dies after succumbing to an infection from an injury sustained during a violent confrontation—another clear connection between overpopulation, crime, and scarcity in the novel, as the hospital runs out of the antibiotics he desperately needs—he explains to Shirl that the development of modern medicine and lower childhood mortality rates are responsible for throwing birth control and death control out of sync: “Now, how come that for ninety-nine per cent of the time that people have been on this earth we never had any overpopulation problems? . . . A lot of babies died, a lot of kids died, and everybody else died young. . . . They bred like flies and died like flies” (Harrison 222-223). However, then “modern medicine arrived. Everything had a cure. Malaria was wiped out[.] . . . Death control arrived. Old people lived longer. More babies lived” (Harrison 223). The standard neo-Malthusian argument provided here takes for granted that an increase in population is causing a measurable exhaustion of the planet's resources, which sparks social conflict and environmental degradation as corollaries. Birth control, then, is the obvious solution to matching advancements in death control, if the problem is as simple as people “being fed into the world” but “not . . . being taken out of it at the same rate” (Harrison 222-223). In the novel, overpopulation is undoubtedly an *exacerbating factor* of the problems depicted (such as water and food insecurity, declining standards of living), yet this is quite different from ascribing singular causal responsibility for these problems to overpopulation. Instead, I argue that the

⁶³ These concerns were also shaped by Harrison's moving back and forth between the US and Mexico in the early postwar years. Returning to Mexico a decade and a half after moving back to the United States, he reflected: “we came back about 15 years after living there: the population had doubled. Why? Death control and no birth control. Malaria had been endemic, kept the population level. The new regime in its wisdom used aerial spray, killed all the mosquitoes in the swamps and wiped out malaria. Doubled the population in 15 years. You must have birth control. You can't have one without the other” (Harrison qtd. in Ireland 149).

novel exposes a tension in the overpopulation discourse by ascribing to Sol a clearly oversimplifying argument that suggests “our troubles come from only one reason. Too goddamn many people” (Harrison 222). The book shows Sol’s argument to be oversimplifying by also making clear and persistent references to other sources of “our troubles,” such as historical resource mismanagement by American settlers, pervasive political fumbling and poor long-term planning, and wealth inequality and overconsumption. In other words, like Ehrlich’s *The Population Bomb*, the novel advocates for population control measures, but does not straightforwardly assert “our troubles come from only one reason,” as it identifies several causes of social unrest and environmental degradation which are not in any meaningful sense the inevitable result of sheer population numbers (Harrison 222).

Part Two: Harrison Beyond Neo-Malthusianism: Historical and Ecological Frames

While elements of Harrison’s novel reflect contemporary neo-Malthusian concerns, the novel nonetheless demonstrates an environmental awareness and anxiety beyond the narrow scope of population growth. The novel achieves this nuance by showing that the historical relationships between American settlers and non-human nature, irresponsible political decision-making, and overconsumption have led to the socioecological problems that spark social unrest in the city. In the novel’s Introduction to Part One, the narrator summarizes the historical events leading to New York’s ‘founding’. Importantly, *before overpopulation is discussed in the novel*, Harrison provides the reader with examples of how Dutch, British, and American settlers have engaged in destructive and extractivist patterns of behaviour. These historical examples pre-date the twentieth-century population boom, which shows that the exploitative relationships between settlers and non-human nature had little to do with demographics. The passage reads:

stolen from the trusting Indians by the wily Dutch, taken from the law-abiding Dutch by the warlike British, then wrested in turn from the peaceful British by the revolutionary colonials. Its trees were burned decades ago, its hills leveled and the fresh ponds drained and filled, while the crystal springs have been imprisoned underground and spill their pure waters directly into the sewers. (Harrison 11)

The idea of scarcity as a natural and inevitable effect of overpopulation is complicated here by the mention of water—ironically, given the novel’s central conflict stems from water shortages—having been “imprisoned underground” and spilled “directly into the sewers” (Harrison 11). Harrison’s future New York of 35 million people who struggle to find water, food, and shelter only emerges *after* this longer history, which includes *centuries* of colonial regimes burning forests, levelling hills, and wasting water.

The novel shows the historical dimensions to the ecological crises it presents by shifting and drawing connections between two timeframes: European (become American) colonial history and Andy Rusch’s childhood. Timothy Clark explains in *Ecocriticism on the Edge* (2015) that ‘scale framing’ is “a constitutive, unavoidable element of any representation, evaluation or literary reading [and] is to presuppose or project a certain scale in space and time for its issues” (Clark 73). Different temporal or spatial scales can help conceal, reveal, or alter how we understand the significance of a given phenomenon, which Clark helpfully explains in relation to driving, as one’s individual actions are almost immeasurably small, yet, when scaled up to include the actions of millions of people, become a huge ecological problem (Clark 9). In the novel, Andy’s childhood experiences on his family farm are juxtaposed with a more historical discussion of water consumption, which shows how culpability for the water crisis changes

depending on how it is (scale) framed. As a child, Andy's family was forced to move from California to the East Coast because of droughts:

I was just a little kid when we left and I hardly remember it. All the farming in those valleys was done with irrigation—canals and pumps. My father's ranch had pumps and he didn't think it was very important when the geologists told him he was using fossil water, water that had been in the ground thousands of years. Old water grows things just as well as new water. But there must have been little or no new water filtering down because one day the fossil water was all used up and the pump went dry. I'll never forget that, the trees dying and nothing we could do about it. (Harrison 114-115)

The novel evokes the notion of deep geological time in the term "fossil water," which is balanced with the relatively brief and resource-intensive history of European settlement provided in the Introduction to Part One (Harrison 114). While the failure of the Rusch's ranch might be indicative of contemporaneous trends in poor farming practices and overconsumption of water related to population growth, this is also framed within a wider historical backdrop of settler and capitalist agriculture's running the metaphorical and actual wells dry. There are two elements here which are present throughout the novel that suggest population growth is not solely to blame. The first is a matter of historical record that the novel explicitly acknowledges, which is that destructive capitalist agricultural and resource extraction methods (preconditions for patterns of overconsumption) significantly pre-date anything resembling overpopulation; the second, and related, is that indiscriminate and inefficient use of renewable and non-renewable natural resources historically (e.g., wasting all the 'fossil water') is *at least* as responsible for ecological degradation—and the food and water shortages the novel depicts—as population growth.

The novel's two sections are framed by extreme weather events, which shows that ecological anxieties quite literally frame the novel. Far from serving merely as background or setting, climate significantly shapes more traditionally 'literary' elements of the novel. Harrison's commentary on his own writing method suggests that this was intentional, as he employed a technique "he calls 'background as foreground,'" which allowed him to show that the background "'is what it's all about—the background is the foreground. In the book, which appears at first just to be an adventure story, I didn't draw attention to the setting—I just let it sink in slowly. When the reader is about two-thirds into it he suddenly becomes aware of the horrible reality of this terrible New York of the future'" (Harrison qtd. in Ireland 152-153.). In this sense, the reader—like the book's characters—may become *acclimatized* to the novel's environment over time, taking weather for granted as the backdrop upon which the 'real narrative' develops. However, Harrison's comments encourage us to consider how the novel's framing by climate events implies that the whole narrative occurs within the context of a disrupted environment. In this way, the weather and climate actively shape human freedom, mobility, and security in the novel. Part One, for example, opens with a suffocating heatwave: "Monday the ninth of August, 1999—and hot as a furnace already, with the city still imbedded in the heat wave that had baked and suffocated New York for the past ten days" (Harrison 15). The narrator suggests that what is remarkable about the heatwave is how *unremarkable* it is for the city's inhabitants. The narrator later informs the reader that "the heat wave had gripped the city for such a long time that it was not mentioned any more, just endured" (Harrison 144). Harrison frames a typically 'background' concern, weather, as essential to the narrative, which suggests that ecological anxieties in the novel are of more than secondary importance to 'foreground' elements like overpopulation.

There is an emphasis in *Make Room! Make Room!* on how the embodied effects of overpopulation are heightened by weather events. The sense of overcrowding is amplified by the heat: “the heat of Twenty-fifth Street hit him [Andy] in a musty wave, a stifling miasma compounded of decay, dirt and unwashed humanity. He had to make his way through the women who already filled the steps of the building, walking carefully so that he didn’t step on the children who were playing below” (Harrison 20). The affective experience of overcrowding is coupled with the heat, drought, and lack of access to water: on the same page as this description of heat and overcrowding, the water access points are locked for the first time (Harrison 20). Shortly after the organized water protests are mentioned for the first time, Andy remarks that the heat is whipping the city into a frenzy: “it must be the heat, I can’t sleep well and there are the nightmares. It’s this endless summer and all the troubles, one thing just seems to lead to another. First the heat, then the drought, the warehouse thefts and now the Eldsters. They were crazy to come out in this kind of weather. Or maybe they’re being driven crazy by the weather” (Harrison 23). It is not only heat, however, that frames the novel’s social unrest; Part Two of the novel opens with a terrible cold spell, which, juxtaposed with the extreme heat, emphasizes that the climate has become more unstable. In fact, the first words of Part Two are spoken by a woman in conversation with Shirl as they wait for water rations: “Everyone says this is the coldest October ever, I never seen a colder one. And the rain too, never hard enough to fill the reservoirs or anything, but just enough to make you wet so you feel colder” (Harrison 187). The irony, she points out, is that there is enough rain to cause discomfort, but not enough to supply the people with drinking water. What remains of the social order in Harrison’s dystopian future begins to fray as the relationship between human beings and non-human nature becomes less stable. Harrison’s exploration of the relationship between an unstable climate and unstable social

conditions presciently anticipates the work of Anthropocene scholars and environmental historians who have recently noted that climatic stability was essential to the establishment of advanced human civilization: “all of what is conventionally understood as human history, the entire history of agriculture and of civilization, has taken place in the Holocene. Or perhaps one should say it all took place in the Holocene” (McNeill and Engelke 1).

Ecological Degradation, Overconsumption, and The Collapse of the Future

In addition to foregrounding the climate as a significant force that shapes the social conditions of future New York, the novel shows that socioecological problems like environmental degradation and scarcity are not the inevitable result of population growth, but rather are unfortunate consequences of overconsumption and irresponsible political and economic decisions that long pre-date the twentieth-century population explosion. This complicates a straightforwardly neo-Malthusian reading of the novel that might suggest sheer human population numbers are to blame for these problems. Two-thirds of the way through the novel it is revealed that the cause of the social disruption in New York is socioecological. Detective Dwyer explains to Andy that there “was a fertilizer shortage last spring, which means the crop wasn’t as good as expected. There have been storms and flooding. The Dust Bowl is still growing. And there was that trouble with the poisoned soybeans from the insecticide. You all know just as much about it as I do, it was on TV” (Harrison 199-200). Here, the novel displays an awareness that chemical pesticides are a socioecological problem by echoing warnings from Carson and Ehrlich about the environmental effects of pesticides and the social ramifications of a dependence on pesticides in food production. Dwyer warns Andy that people will go hungry because there is not enough artificial fertilizer to compensate for degraded soil

conditions and to prop up artificially high agricultural yields, while soybean production was unintentionally compromised because farmers were too cavalier with insecticide. The North American Dust Bowl during the 1930s is a textbook case of what Foster and Clark call an “ecological rift,” which describes an environmental catastrophe that results from when non-human nature “is remade in such a way as to promote a single end: the accumulation of capital, irrespective of the lessons of rational science and conditions of sustainability” (Foster and Clark, “Marx” 152). The novel draws an analogy between the 1930s Dust Bowl (which would have been familiar to—if not a lived experience of—many readers in 1966) and the dystopian Dust Bowl conditions in the future, which places this fictional crisis within a longer ecologically-disastrous history. Like the socioecological effects of the North American Dust Bowl in the 1930s, which was caused by settler-capitalist agricultural practices that included indigenous land theft, monocropping, and the expansion of ranching and “cash-crop agriculture” (Holleman 245), the scarcity conditions in *Make Room! Make Room!* are not an inevitable consequence of overpopulation, but rather result from poor agricultural practices that are compounded by bad political decision making. Dwyer explains, “what it adds up to is that a lot of small things have piled up to make one big trouble. There have been some mistakes made by the President’s Emergency Food Planning Board and you’re going to see some new faces there. So everyone in this town is going to have to tighten his belt a bit” (Harrison 200). This historical context and Dwyer’s suggestion “that a lot of small things have piled up to make one big trouble” complicate the neo-Malthusian idea captured in Sol’s remark that “we live in a lousy world today and our troubles come from only one reason. Too many goddamn people” (Harrison 222). Contrary to the claim that overpopulation can be said to inevitably cause crime, moral decay, and social

unrest, it seems more likely that mass discontent may result from popular disapproval of poor governance and resource management.

How some human beings have driven environmental collapse and social unrest through overconsumption, an unequal distribution of wealth, and a mismanagement of natural resources pervades the novel. Similar to how Ehrlich argues that wealth inequality and overconsumption are massive drivers of ecological degradation, Harrison's comments in the novel's Prologue contradict Sol's neo-Malthusian claim noted above (Harrison 222). The Prologue explains,

in 1950 the United States—with just 9.5 per cent of the world's population—was consuming 50 per cent of the world's raw materials. This percentage keeps getting bigger and within fifteen years, at the present rate of growth, the United States will be consuming over 83 per cent of the annual output of the earth's materials. By the end of the century, should our population continue to increase at the same rate, this country will need more than 100 per cent of the planet's resources to maintain our current living standards. (Harrison 9)

Harrison conveys a few things to the reader with these statistics that demonstrate a nuanced understanding of population growth's impact on socioecological problems. Since consumption does not directly correlate with population—"9.5 per cent of the world's population" was consuming *half* of the planet's resources in 1950—it does not logically follow that population is the sole (or even main) driver of the socioecological problems like scarcity and an unstable climate that the novel portrays (Harrison 9). The fact that total consumption is not meaningfully pegged to population is even more stark if we interpret these same statistics differently: the non-American 90.5 per cent of the planet's human population (and this even includes the other, Western hyper-consuming nations) *could double in size and continue using raw materials the*

same way without changing humankind's overall resource usage if this bloated 9.5 per cent of the global population disappeared. In this context, Harrison appears to be pointing out that *per capita consumption* rather than *population* is the largest share of the problem. Related to this, Harrison is also critical of the growth imperative that is driving ever-increasing American levels of consumption, to which he can seemingly envision no end—hence, the need to limit population, and the American population especially. As with Ehrlich, Harrison acknowledges that American levels of consumption (which is itself an overgeneralization that glosses over racial and class inequities) are significantly more responsible for humankind's total ecological footprint than increasing population rates, which are often highest in precisely the places that have the lowest per capita levels of consumption. With this in mind, I think it is possible to have a clearer sense for how Harrison's novel shows that socioecological problems often associated with overpopulation are intimately related to overconsumption and inadequate political planning.

Harrison links the problems associated with scarcity and ecological degradation in the novel to overconsumption, greed, and poor political planning and foresight. In fact, even Sol, who previously chalks up all their problems to population, contradicts the neo-Malthusian idea that overpopulation inevitably causes socioecological problems. While he first blames “the stinking politicians and so-called public leaders who have avoided the issue [birth control] and covered it up because it was controversial,” he continues, explaining to Shirl that

mankind gobbled in a century all the world's resources that had taken millions of years to store up, and no one on the top gave a damn or listened to all the voices that were trying to warn them, they just let us overproduce and overconsume, until now the oil is gone, the topsoil depleted and washed away, the trees chopped down, the animals extinct, the

earth poisoned, and all we have to show for this is seven billion people fighting over the scraps that are left . . . I say the time has come to stand up and be counted. (Harrison 226)

Harrison cleverly inserts the phrase “to stand up and be counted” to refer to both the accounting of population numbers and the imperative task of *holding accountable* those structures and people responsible for the problems noted in the passage. Though overpopulation and birth control are mentioned as the problem and solution, Sol also emphasizes that humankind “overproduced” and “over-consumed” for a century. As the Prologue suggest, however, it was *not exactly humankind* who “gobbled” everything up so much as it was *hyper-consuming nations* and certain extractive patterns of behaviour that “overproduce[d] and overconsume[d]” the world’s natural resources. Once again, Harrison’s ambiguous language—‘overproduce’ can be understood both in terms of overbreeding and overproduction of commodities—complicates any straightforward association between overpopulation and the economic, social, political, and ecological problems the novel raises. As I have suggested, overpopulation is an *exacerbating* rather than a causal driver of environmental degradation—and this is an important distinction. Given the language and tone of the passage, even if we bracket the fact that fossil-fuel extractivism and industrial commodity production pre-date the twentieth-century (“gobbled in a century”), it seems unlikely that Sol’s frustration with ‘mankind’ rests more on our numbers than on “the stinking politicians and so-called public leaders” who failed to prevent the poisoning of the earth and its animals and the overconsumption of oil, topsoil, trees, and water, as the passage suggests (Harrison 226). To suggest that ecological degradation is simply a result of population growth fails to understand that overproduction and overconsumption occur because they are foundational to an economic system whose logic is “grow or die[.]” . . . Under such a regime the economic dimension consumes all else, nature is continually devalued in the search for profit

along an expanding frontier, and the ecological crisis follows inevitably” (Kovel 121). While population growth *will* exacerbate scarcity and ecological degradation when human/non-human nature relations are characterized as described above (i.e., in the context of a growth-based global economic system), it seems unlikely that Harrison would have supported the same destructive and extractive relations between humans and non-human nature on a smaller scale. Instead, Harrison leaves the door open to alternate possibilities where an expanded population may not have tread so heavily on the planet, which suggests that *how humans live*—rather than *how many humans are alive*—is a significant indicator of environmental wellbeing.

This possibility is further supported by the numerous examples in the novel of how a greater foresight in resource management and social infrastructure planning might have prevented the environmental crises that pervade the novel and drive the novel’s central conflict. The water scarcity issue is framed in terms of mismanagement by New York City officials, as the reserves of fresh water are depleted not simply because there are too many thirsty people, but because human error turned fresh water into salt water. Andy explains to Sol and Shirl that the water treatment process failed, so fresh water that was already mixed with salt water became too salty to drink: “It’s been brackish for a long time, you can taste it when it’s not mixed with upstate water, but they were supposed to have figured out just how much to pump so it wouldn’t get worse. There must have been a mistake or the stations have been pumping more than their quota” (Harrison 180). While the dialogue does not make clear why city officials did not “figur[e] out just how much to pump so it wouldn’t get worse,” the suggestion that this water shortage was caused by either a mistake or by greed (pumping more than the quota) connects the current situation to the deeper historical problem identified by the narrator in the novel’s Prologue: at the hands of American settlers, “the fresh ponds drained and filled, while the crystal

springs have been imprisoned underground and spill their pure waters directly into the sewers” (Harrison 11). The novel’s critique of poor infrastructure and a lack of planning for the future is also present during the conversation when Sol explains to Shirl that the collapsed car economy was not replaced with public transport infrastructure, so now “there’s no place to go. This whole country is one big farm and one big appetite. There’s just as many people down South as there is up North and, since there is no public transportation, anyone who tried to walk to the land of sunshine would starve to death long before he got there” (Harrison 182-183). Sol subsequently laments the lack of political foresight and economic investment that may have helped ‘humankind’ cope with growing energy demands, which echoes the promises of endless renewable energy during the 1950s that I discussed in Chapter One: “In the fifties and sixties there was a lot of talk about building atomic power plants to purify sea water so the desert would bloom and all that jazz,” but this never happened: “It takes at least five years to build just one atomic plant, so the ones that should have supplied the water and electricity we need now should have been built then. They weren’t” (Harrison 243). Whether or not we agree with the promise of nuclear technology to make the desert bloom, Harrison clearly criticizes the failure to invest in sustainable energy infrastructure, as he already seems convinced by 1966 that the opportunity for a clean, nuclear future is in the rear view.

Instead of purified water and blooming deserts, Harrison’s future contains “a new miracle ingredient supplied by our benevolent government . . . called ener-G” (103-104), which is not only a parody of the technoscientific faith that human ingenuity can solve any problem we might face, but more importantly shows how an unsustainable relationship between human beings and non-human nature reproduces ecological degradation, scarcity, and threatens the viability of the planet in the long term. One way of thinking about this, following Marx and Marxist ecologists,

is that human beings reproduce the social world in relation to non-human nature, and this can be understood as a ‘metabolic interaction’: “‘a process between man [*sic*] and nature, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature” (Marx qtd. in Foster, *ME* 141). When human beings exploit non-human nature, it can create “‘irreparable rift[s]” in ecological systems (Marx qtd. in Foster, *ME* 141). In the novel, the near exhaustion of the planet by ‘humankind’ (i.e., mainly Americans, as the Prologue suggests) has created an irreparable ecological rift in the planet’s oceans. In this context, the following passage contains an ecological critique or “moral” that is consistent with contemporaneous environmental thinking and with current Marxist ecological analysis. Sol explains to Andy how ener-G is ‘cultivated’ by trawling the ocean for “plankton” and “all the microscopic sea things that you will be very surprised to find out the mighty whales live on. *All three whales that’re left. The smallest life forms supporting the biggest, there’s a moral there someplace.* Anyway—the plankton gets sucked in and hits a sieve and the water gets spit out and the plankton gets pressed into little dry bricks” (Harrison 104, emphasis added). On one hand, the passage and its warning is very straightforward: American patterns of overconsumption have so degraded ecosystems and ‘natural’ food sources that Americans are now relying on plankton to survive; even the “mighty” and “biggest” species is doomed to collapse because of anthropogenic activities (Harrison 104). On the other hand, the language in the passage is intentionally ambiguous as it parallels the size of whales (the largest animal life form) and human beings (certainly the ‘biggest’ in many respects other than mass, including in terms of negative ecosystem impacts). This double-meaning encourages the reader to consider what the moral is, what it means, and how it applies to ‘us’. The moral is the familiar “Alpha of ecological science”: “everything is connected to everything else,” which Andreas Malm points out does *not*

mean everything is connected to everything else in exact equal measure, as “some parties behave disruptively within that web” and have outsized negative impacts (Malm, *Storm* 62). The analogy between whales and humans drawn by the passage’s ambiguity implies a shared sense of vulnerability that can be extended to the ‘web’ of non-human nature more broadly, which suggests that the novel poses serious questions about the viability of the future for humans and non-humans alike: having killed off the ‘mighty’ whale because of our consumption habits, what has/will become of the rest of non-human nature? Having reduced ourselves to consuming “all the microscopic sea things that you will be very surprised to find out the mighty whales live on” (Harrison 104), what will be left for humans to consume once this food source disappears, or if this highly technical scheme fails?

While the problem that everything has been “gobbled up, used up, [and] worn out” is initially posed as the inevitable consequence of “too goddamn many people,” a closer reading of the novel shows how socioecological problems like environmental degradation, scarcity, hunger, and species extinction are historical in nature and are driven by overconsumption and poor political decision making (Harrison 243). These historical trends precede the twentieth century and the unprecedented population boom during the Great Acceleration. To blame socioecological problems on overpopulation is to ignore centuries of largely Western and capitalist development, extraction, and consumption. Suspicious of Sol’s monocausal theory, Shirl prods: “you can’t really blame all our troubles on overpopulation” (Harrison 242). Sol counters,

The coal that was supposed to last for centuries has all been dug up because so many people wanted to keep warm. And the oil too, there’s so little left that they can’t afford to burn it, it’s got to be turned into chemicals and plastics and stuff. And the rivers—who polluted them? The water—who drank it? The topsoil—who wore it out? Everything has

been gobbled up, used up, worn out. What we got left—our one natural resource? Old-car lots, that’s what. Everything else has been used up and all we got to show for it is a couple of billion old cars that are rusting away. One time we had the whole world in our hands, but we ate it and burned it and it’s gone now. One time the prairie was black with buffalo, that’s what my schoolbooks said when I was a kid, but I never saw them because they had all been turned into steaks and moth-eaten rugs by that time. Do you think that made any impression on the human race? Or the whales and passenger pigeons and whooping cranes, or any of the hundred other species that we wiped out? (Harrison 243)

As Shirl’s comment implies, the proposition that we can blame all of our problems on overpopulation is an oversimplification. Sol’s reply implicitly acknowledges this fact by drawing attention to various human actions which have not been done by all of ‘humankind’ and are by no means inevitable extensions of our physical nature, such as burning coal or turning oil into chemicals (which Rachel Carson warned about some 60 years ago) or manufacturing billions of cars (hardly a genetic predisposition of *homo sapiens*). Extractive industries, such as coal and oil development, and environmentally disastrous industries, such as chemical and car production, are concrete reasons why the planet in this dystopian future appears “gobbled up, used up, worn out” (Harrison 243). This passage follows the Prologue by invoking the idea of historical time, and how ‘humankind’s’ relationship to energy and production has been sped up over the past few centuries to a rate at which non-human nature cannot cope, which echoes Carson’s warning only four years earlier that “given time—time not in years but in millennia—life adjusts, . . . but in the modern world there is no time” (Carson 6). In this long passage, as he does earlier in the novel, Harrison gestures to the destructive behaviours and patterns of consumption historically that have led to this horrifying future in the first place: digging and burning fossil fuels; polluting and

wasting water; overusing and degrading the soil; and slaughtering non-human animals (sometimes for food, other times for sake of convenience). It is also worth considering the extent to which *the very idea* that “we had the whole world in our hands” is responsible for the fact that “we ate it and burned it and it’s gone now” (Harrison 243). So, despite the popular neo-Malthusian refrain that all “our troubles come from only one reason,” the novel shows that even before ‘the population explosion,’ *certain* human beings engaged in *specific* types of behaviour that placed ‘humankind’ on a crash course with non-human nature.

4. John Brunner’s *Stand on Zanzibar* (1968)

Like many of the authors of dystopian fiction that I have discussed in this dissertation, Brunner was preoccupied with human “survivability” in an age when the spectre of global destruction loomed large in the popular imagination (Brunner, “Genesis” 39). Like Harrison, he was influenced by the antinuclear, overpopulation, and environmental movements of the 1950s and 1960s, and he felt compelled to warn his readers of the impending and interrelated crises of war, ecological degradation, corporate domination and consumerism, and genetic manipulation. Adopting a more global perspective than the other novels I have discussed in this dissertation, *Stand on Zanzibar* (1968) draws attention to neocolonial relationships and uneven economic development within the global capitalist system to counter the neo-Malthusian claim that scarcity and conflict are caused by overpopulation. Instead, the novel implicates corporate profiteering and Western levels of consumption for systematically reproducing wealth inequality on a global scale. Whereas Harrison used different scale frames to explore the historical dimensions of ecological degradation, Brunner adopts different scale frames for articulating the connections between the global corporate elite, the American New Poor, and the globe’s formerly colonized

people. The novel's global perspective is facilitated by its documentary style and use of collage, which allow Brunner to *refute* the idea that there is an outside of capitalism and *assert* that the planet's economic and ecological systems are unassailably interconnected. Moreover, the novel's sardonic tone conveys Brunner's opposition to technological solutions to socioecological problems, which the book shows are designed to perpetuate the profoundly unequal global economic status quo. Much of the novel's plot is driven by two major programs for extending status quo socioeconomic relations between the West and the rest of the world: the Beninia development project and the global race to produce a genetically pure national body politic. The first program is a straightforward neocolonial extraction project backed by the US government with the goal of maintaining domestic standards of living, which echoes Ehrlich's assertion in *The Population Bomb* that American standards of living condemn other parts of the world to poverty. The second of these programs, eugenics, is framed as a technological solution to overpopulation *without addressing overconsumption*, as the goal is to develop a 'competitive advantage' over other nations by creating superhumans. The idea that a nation's most primary resource is its people is repeated throughout the novel. Taken together, these programs show that *Stand on Zanzibar* portrays overconsumption, socioeconomic inequality, and the exploitation of human beings and non-human nature—rather than population growth—as the source of the planet's socioecological problems.

Criticism

Hickman and Parker argue that Brunner's *Stand on Zanzibar* is notable for its anti-corporate and anti-colonial tone. Much like Ehrlich was concerned with the relationship between population growth and uneven economic development across 'overdeveloped' and

‘underdeveloped’ countries, Hickman and Parker suggest that “diverse pressures of a burgeoning global population” in the novel encourage “development in Africa combined with genetic engineering in Asia” (Hickman and Parker 219). They also helpfully note the critique of technological fixes that is implied in this “corporate [rather] than geopolitical view of the world of the future, where jobs and tech companies matter as much to the future of the global population as governments” (Hickman and Parker 219). Yet, they do not establish how the novel’s critique of corporate capitalism is related to what I argue is its clear critique of an overemphasis on population dynamics. In this way, they do not account for how the novel foregrounds the relationship between overconsumption, neocolonialism, and widespread ecological degradation.

Unlike Hickman and Parker, Eric Otto emphasizes *Stand on Zanzibar*’s critique of contemporary neo-Malthusianism’s fixation on overpopulation. As Otto points out, the text does not necessarily encourage readers “to deemphasize the global harm of overpopulation,” but instead to understand that “modern economic doctrine” demands “greater attention” (Otto 62). I agree with Otto that “*Stand on Zanzibar* can be read as an effort to upset the myth that human overpopulation is more responsible for ecological and social breakdown than modern economic doctrine” (Otto 65). However, whereas Otto reads Brunner’s novel in opposition to “deep ecology’s and ecotopia’s strong, if not dogmatic, attention to population controls by highlighting the growth economy and modern consumption habits as much more detrimental than overpopulation to ecological health” (Otto 62), my reading takes a more global perspective: not only does *Stand on Zanzibar* show how corporate profiteering and neocolonialism are let off the hook for the planet’s socioecological problems because of an overemphasis on overpopulation, but the novel also shows an awareness of the broader shifts occurring during the Great

Acceleration that signify transnational consumer capitalism's increasing assimilation of non-human nature. In other words, it is not only that Brunner's novel suggests we need to pay more attention to 'modern economic doctrine' (though it does do this), but that we also need to attend more specifically to how political and economic structures are reconfiguring the planet to the benefit of a very small minority of the world's population. It is in this context that we can also understand the novel's critique of technological solutions related to 'overpopulation'.

Lastly, Heise argues that Brunner's *Stand on Zanzibar* broke with conventional literary representations of overpopulation which "tended to set their overpopulation scenarios in Western cities and to examine the fate of individuals and communities under conditions of extreme crowding" (Heise 72). Contrary to novels like *Make Room! Make Room!*, *Stand on Zanzibar* is unique because it "moves the emphasis from the portrayal of individuals caught in overcrowded environments to a cosmopolitan panorama of widely divergent social, racial, and national groups" (Heise 75). As Heise and others have observed, Brunner achieves this effect by using techniques drawn from the work of John Dos Passos.⁶⁴ Brunner "presents his future world through a collage of multiple narrative fragments," which are conveyed through numerous media, including "party conversations, advertisements, news bulletins, television images, legal texts, statistical data, quotations from books, and a multitude of mini-short stories" (Heise 75). The effect produced, Heise explains, is that "the narrative structure itself . . . turn[s] the reader's attention away from the individual and toward the more general social, economic, and cultural patterns" (Heise 78). I build on Heise's discussion of Brunner's use of collage in my reading of the novel by arguing that this enables him to show that, since there is no 'outside' of global capitalism and its ecologically destructive growth imperative, any successful attempt to address

⁶⁴ Brunner acknowledged in 1970 that he borrowed Dos Passos's "technique of documentary association" because, as he puts it, "the protagonist of my book was going to have to be the entire world" (Brunner, "Genesis" 36).

the ongoing socioecological crises that the text identifies cannot include technological quick fixes, such as large-scale extraction projects or insane eugenics programs. Instead, the novel shows that overconsumption and the ongoing legacy of neocolonialism must be addressed in order to resolve the profoundly unequal global economic status quo.

Overpopulation, Scale, Genetics, Instrumentalism

Like Harrison, Brunner acknowledges that swelling populations pose a danger to the wellbeing of the planet *if* Western levels of production and consumption are not significantly reduced. While the narrator directly addresses the reader and states that “I certainly won’t contest the fact that there are too many of us,” the novel shows that it is *certain actions in specific contexts*—rather than raw population numbers—that reproduce devastating ecological effects (Brunner 139). In fact, the narrator hints at the need for a nuanced understanding of the causes of the socioecological problems that are associated—rightly or wrongly—with overpopulation by adding an important question to the admission above: “But are we adopting the right measures to cope?” (Brunner 139). One of the primary ways in which the novel engages with questions of population growth and ecological degradation is by looking at scale effects, or how the meaning of human actions change depending on different scalar registers. As Clark explains, this can show how choices that are traditionally conceived as individual ones, such as having a child or owning a vehicle, may be complicated when considered at different levels of scale. This type of scalar thinking can help us make sense of the shifting ground of ethical action in the age of anthropogenic global warming because some problems “are invisible at the normal levels of perception but only emerge as one changes the spatial or temporal scale at which the issues are framed” (Clark 22). The ethicality of a given type of action, such as driving a vehicle, will also

change depending not only on how many other people drive, but depending on the type of energy used to produce and/or power the vehicle and the alternative transportation choices available. The car economy is an easy target for Brunner to point out that certain human actions that may appear viable in individual cases become ecologically untenable when considered on a mass scale.⁶⁵ Early in the novel, the narrator explains to the reader that, “like living creatures, automobiles expired when their environment became saturated with their own excreta. We ourselves are living creatures. We don’t want the same to happen to us. That’s why we have eugenic legislation” (Brunner 13). Adopting an ironic tone, the narrator informs the reader that we are, in fact, “living creatures,” which is juxtaposed with the emphasis on staving off mortality in the novel that I will discuss shortly (Brunner 13). The passage implies that below a certain threshold (before the environment “became saturated”), the car economy *was tenable*, much like the passage implies that the total human population *could* reach a level that would no longer be sustainable: “We don’t want the same to happen to us. That’s why we have eugenic legislation” (Brunner 13). However, the phrase “automobiles expired when their environment became saturated with their own excreta” uses the passive voice to cleverly hide culpability for creating these vehicles and causing the ‘oversaturated environment’. Just as the agent responsible for this saturation is hidden—a small portion of human beings—the term “oversaturated” is also cleansed of its socioecological meaning: *ruined, polluted, ecologically destroyed*. Drawing on this questionable analogy between human beings and the objects ‘we’ create, Brunner follows Harrison in flagging the overly simplistic neo-Malthusian assumption that ‘human beings’ will naturally reproduce until ‘we’ spoil ‘our’ own environments; hence, the passage concludes with the sardonic claim that human beings need “eugenic legislation” so that we do not end up as

⁶⁵ The car economy also happens to be an example used by Clark in *Ecocriticism on the Edge* to explain scale effects (Clark 7-10).

unwitting victims of “oversaturation” (Brunner 13). With the important question *are we adopting the right measures to cope?* in mind, this passage encourages the reader to consider what other factors—including *what, how much, and whose excreta*—are ‘oversaturating’ the environment, and to what extent we can reasonably answer that it is the fault of human beings in the abstract, rather than certain forms of polluting structures and behaviours.

As the question *are we adopting the right measures to cope?* implies, Brunner’s novel warns that if we do not properly identify the causes of socioecological problems like environmental degradation, scarcity, and inequality, then we run the risk of exacerbating these issues with bad behaviours and ways of thinking. In this sense, Brunner seems to agree with what Carolyn Merchant calls “an ethic of restraint,” which is shared by Frankfurt School thinkers like Adorno, Horkheimer, and Marcuse and radical ecology more broadly: “the continuance of life as we know it requires an ethic of restraint, a holding back in implementing and producing some of the things potentially possible through science and technology” (Merchant 36). In this way, like other texts that I have discussed in this dissertation, including Vonnegut’s *Player Piano* (1952) and Carson’s *Silent Spring* (1962), *Stand on Zanzibar* critiques the anthropocentric dream of absolute control over human beings and non-human nature. Brunner’s criticism of the desire to manipulate human beings and non-human nature is clear in a passage that compares building nuclear bombs to biologically altering human genetics.⁶⁶ Specifically, evoking the invention of the nuclear bomb, the narrator laments that by proposing eugenics as a technological solution to scarcity conditions and humankind’s ecological impact that ‘we’—presumably Western

⁶⁶ Brunner was an active participant in antiwar struggles, which is reflected in the novel’s staunch antiwar tone. As Bruce Sterling writes in his introduction to the 2011 version of *Stand on Zanzibar*, “in his alter ego as a left-wing peace campaigner, [Brunner] once wrote the marching anthem for the Committee for Nuclear Disarmament” (Sterling XII). This passage also echoes the tendency I have emphasized in this dissertation among proponents and opponents of nuclear technologies, environmentalists, anti-population growth activists, media, and politicians to adopt the nuclear bomb a heuristic for understanding humankind’s capacity to direct the course of life on the planet.

scientists and technocratic governments—have failed to learn from history the dangers of blindly developing potentially world-altering scientific programs to solve political, economic, and socioecological problems. According to the narrator, “we can claim to be in sight of the day when we won’t merely be able to ensure the sex of our offspring (if we can afford the fee) but also to choose whether we’ll have a math genius in the family,” yet despite this knowledge “we know less about our reactions in the mass than we do about the behaviour of non-human things like a lump of U-235. [. . .] Papa Hegel he say that all we learn from history is that we learn nothing from history” (Brunner 134-135). Here, Brunner expresses an unease about using biological scientific methods to decide whether “we’ll have a math genius in the family, or a musician, or a moron” by warning that it is a potentially dangerous incursion into fundamental biological processes in a way that can be considered analogous to developments in physics that led to nuclear weapons, as the narrator remarks that we understand less about human dynamics—“our reactions in the mass”—than we do about Uranium-235. In this way, the text calls into question the idea that all scientific ‘developments’ are necessarily positive, which echoes Vonnegut’s critique of the “monumental demonstration of faith” in machines in *Player Piano* and Carson’s description of chemical pesticides as “Neanderthal” science in *Silent Spring* (Vonnegut 300; Carson 297). This analogy is furthered by the suggestion “that we learn nothing from history,” which can be understood as Brunner’s inversion of the Enlightenment myth of linear human progress—a utopian vision of science and history that largely collapsed with the detonation of the bombs over Japan (Brunner 135). As Peter Fitting puts it, “the faith in a specifically scientific resolution of human problems . . . ended at Hiroshima and with Oppenheimer’s disgrace” (Fitting, “Modern” 61). In this context, while the novel does acknowledge that overpopulation might have socioecological consequences, it warns that if we

spend too much energy on overpopulation and scientific resolutions to this ‘problem,’ we might end up with catastrophically bad solutions that repeat the mistakes of history, which can explain the narrator’s sarcastic remark that the “population explosion” is “unique in human experience, an event which happened yesterday but which everyone swears won’t happen until tomorrow” (Brunner 431).

For Brunner, genetically altering human beings and global capitalism’s reshaping of non-human nature are different expressions of the same problematic techno-scientific rationality that Marcuse describes in *Counterrevolution and Revolt* (1972): non-human nature has been “transformed by society, subjected to a specific rationality which [has become], to an ever-increasing extent, technological, instrumentalist rationality, bent to the requirements of capitalism. And this rationality [is] also brought to bear on man’s own nature” (Marcuse 59-60). Brunner shows how an instrumentalist orientation to the non-human world is turned inward on human beings in the novel through the character Guinevere Steel, who is a successful fashion and cosmetics mogul, and whose carefully curated name calls to mind an inorganic and manufactured coldness. Steel, whose real last name is Dwiggins, has built a company that offers the promise of staving off the aging process through a range of products aimed at slimming figures, concealing blemishes, hiding wrinkles, and correcting imperfections. For Steel, however, the goal of perfecting our imperfections is intimately bound up with a worldview that insists humans can and should triumph over non-human nature. Norman House, one of the novel’s main characters and a guest at one of Steel’s gaudy and gilded parties, criticizes her company’s desire to stave off and conceal mortality. He suggests that her company’s products are dehumanizing and reduce people to mass-manufactured products like TVs: “what I hate is what she represents: the willingness of human beings to be reduced to a slick visual package, like a new television

set-up-to-the-minute casing, same old works” (Brunner 207). During an interview depicted earlier in the novel, Steel explains that her company’s goal is to create products that match the “contemporary” desire to overcome humankind’s limitations as organic beings. Echoing similar opinions and attitudes that were expressed by spokespersons for the chemical pesticides industry who criticized Carson, Steel explains that “we don’t live in the world of our ancestors, where dirt, and disease, and—and what one might call general randomness dictated how we lived. No, we have taken control of our entire environment, and what we choose by way of fashion and cosmetics matches that achievement” (Brunner 52). For Steel, to be ‘contemporary’ is to leave behind our biological and historical roots as animals: controlling our environment and conquering (or at least severely postponing) mortality itself. The same tools that were used to conquer non-human nature—“the world of our ancestors” and “dirt” and “disease”—are now used by agents of consumer capitalism to reduce human beings to “a slick visual package, like a new television set-up-to-the-minute casing, same old works” (Brunner 52, 207). The novel shows that the notion of ‘death control’ is intimately related to ‘humankind’s’ ability to shape ecosystems and protect ourselves from both big and microscopic risks. Throughout the novel, however, Brunner criticizes the techno-scientific dream of absolute control over non-human nature that Steel, among others, personifies.

Global Capitalist Ecology, Global Capitalist Inequality

Brunner’s *Stand on Zanzibar* depicts traditionally ‘human spaces’ as organic and lively systems by collapsing the boundaries between ‘the natural’ and ‘the social’ throughout the novel, drawing attention to ‘environments’ as both real and artificial spaces. In this sense, the novel shows how global capitalism is beginning to reshape planetary ecology during the postwar Great

Acceleration and anticipates insights from Marxist Ecology and related anti-capitalist ecological theories. As Harvey (2017) will point out half-a-century after the publication of *Stand on Zanzibar*, while capitalism is *anti-ecological* in the sense that it is environmentally destructive, it nonetheless *is* a global ecological system. Harvey explains that “Cartesian thinking wrongly constructs capital and nature as two separate entities in causal interaction with each other and then compounds this error by imagining that one dominates over (or, in the case of nature, ‘takes revenge’ upon) the other” (Harvey 247). Instead, he proposes an “alternative way of thinking,” which is that “capital is a working and evolving ecological system within which both nature and capital are constantly being produced and reproduced. . . . The only interesting questions then are: what kind of ecological system is capital, how is it evolving and why might it be crisis-prone?” (Harvey 247). *Stand on Zanzibar* shows that it makes little sense to think about “capital and nature as two separate entities” by blurring the lines between economy and ecology, the social and the natural, and the local and the global. This allows Brunner to convey how “both nature and capital are constantly being produced and reproduced” in a dialectical relationship, which the novel shows to be “crisis-prone” *not* because of overpopulation, but because of overproduction, overconsumption, and extractivism (Harvey 247).⁶⁷ Heise insightfully notes how *Stand on Zanzibar* hybridizes ‘the social’ and non-human nature: “advanced technologies ranging from genetic engineering to digital computer networks give rise to partly natural and partly engineered bodies and environments, and to a planetary habitat that is part biosphere and part artifact” (Heise 70). By showing these types of mutual imbrication between ‘the social’ (human beings) and ‘the natural’ (non-human nature), Brunner cautions against the hubristic

⁶⁷ Today, the product of this dialectical relationship is the climate emergency, which is arguably the result of Western societies treating non-human nature as an inert, dumb resource pool from which it is possible to extract energy and materials for commodity production.

notion that humankind can do what it pleases with ‘nature’ as if ‘it’ were a passive object. I propose that we think about the novel’s preoccupation with overconsumption, neocolonialism, conflict, and ecological degradation in the context of this global capitalist ecological system.

Brunner’s disapproval of the idea that human beings can and should completely control ‘nature’ is evident in his depiction of future Manhattan under a dome because of pervasive “anthropotoxins” (Brunner 45). The novel shows that even the most hyper- and/or overdeveloped spaces like Manhattan, a synecdoche for modern financial capitalism, are irrevocably natural and subject to change and flux. The Fuller Dome is an artificial dome separating Manhattan from the surrounding boroughs, yet the space under the dome is depicted as organic and alive despite its ostensible separation from its natural surroundings. Under the dome, the local ecosystem is pushed to the brink by ‘anthropotoxins,’ despite the fact that “no internal combustion engine had been legal in the city since they put up the dome; the disposal of CO₂ and anthropotoxins from the people themselves was as much as the ventilation system could handle, and on warm days their exuded moisture sometimes overloaded the conditioners, precipitating a kind of drizzle” (Brunner 45). Echoing Steel’s association of ‘being modern’ with overcoming the “dirt,” “disease,” and “randomness” of the past (Brunner 50), dissident author Chad Mulligan claims that a great deal of modern consumer existence is tied to repressing non-human nature: “the whole of modern so-called civilised existence is an attempt to deny reality insofar as it exists. When did Don last look at the stars, when did Norman last get soaked in a rainstorm? The stars as far as these people are concerned are the Manhattan-pattern!” (Brunner 215). Mulligan is critical of how “modern so-called civilised existence” facilitates a delusional sense of detachment from non-human nature, which is so intense that the stars appear to ‘civilized’ people to be an artificial human construction (“Manhattan-pattern”). While the dome is an artificial

space replete with its own “Manhattan-pattern” rain (“exuded moisture”) and stars, it is nonetheless *a type of nature*: a hybrid environment within which human beings overlap with non-human organic and inorganic matter. For example, the lower East Side of Manhattan is described as “an area presently at the bottom of the cycle of death and renewal that sometimes made the city seem like an organism” (Brunner 129). The passage describes the neighbourhood as subject to growth (renewal) and decay (death), while the detritus of consumer ‘civilization’ (advertising and garbage) is portrayed as organic fungi growth: “the wheel turned further, and the bored and prosperous moved out. Now the grace of the elegant buildings was crumbling again under a bright masking of advertisements [...] Across the display slanted the unrelated diagonals of fire-escapes, spotted with piles of garbage like forest fungi” (Brunner 129). There are irreducibly natural elements of even the most artificially built environments, such as Manhattan under the Fuller Dome, which is evidence of the novel’s resistance to the modern Western impulse to partition human beings from non-human nature.

While *Stand on Zanzibar* shows that centres of capital like Manhattan are necessarily part of non-human nature, it is equally true that there is no ‘outside’ of global capitalism. Given that Brunner understood the world itself to be the novel’s protagonist (Brunner, “Genesis” 36), his use of collage enables him to portray snapshots of life all over the planet, which shows that the planet’s people are connected by global economic and ecological systems. In this way, his novel not only offers a “cosmopolitan panorama of widely divergent social, racial, and national groups” (Heise 75), but also demonstrates that Western standards of living and overconsumption are truly global socioecological problems that reproduce global ecological degradation and domestic and international wealth inequalities. In other words, the novel shows that domestic and international wealth inequalities are *relationships* within the context of the global capitalist

ecological system. As I will discuss shortly in relation to the Beninia development project, this allows Brunner to assert that it is a mistake to focus on population growth in developing countries as a strategy for responding to contemporary social, economic, and ecological challenges, as they are (and have been historically) dramatically less responsible for the patterns of production and consumption that degrade the environment.

Like Harrison, Brunner conveys to his audience that overconsumption—rather than simply overpopulation—accelerates the scarcity of resources needed to support human life and degrades the integrity of ecological systems. Also like Harrison, Brunner acknowledges widespread anxieties about the potential for declining standards of living among middle-class Americans, which some factions of the anti-population growth movement vigorously warned about and supported population control measures to prevent.⁶⁸ The unsustainability of Western levels of consumption in a global and interconnected economic, political, and ecological system is asserted early in the novel with the introduction of Mr. and Mrs. Everywhere. As the advertisement explains, “Mr. & Mrs. Everywhere are construct identities, the new century’s equivalent of the Joneses, except that with them you don’t have to keep up. You buy a personalised TV with homimage attachment which ensures that Mr. & Mrs. Everywhere look, and talk, and move like you” (Brunner 8). The new programing is an ideological salve for the socioecological reality that middle-class consumer lifestyles—‘keeping up with the Joneses’—are an impossibility on a planet ravaged by global capitalism. Mulligan reiterates this concern later in the novel, explaining that American levels of consumption are untenable *even with new recycling techniques*: “our resources are stretched to the point where reclaiming a gallon of water

⁶⁸ Here we can recall Richard Bowers, ZPG’s co-founder, who claimed that population controls were necessary to secure his vision of the American dream, which includes “such items as a 9 room house (not to speak of a wilderness mountain retreat or a quest cottage by the sea), two cars, quality heating systems, a wide variety diet, elaborate wardrobe, etc. [. . .] [T]he hallmark[s] of the successful person” (Bowers qtd. in Merchant, *BPB* 170-171).

so someone can drink it a second time costs eleven times more than it did in 1960” (Brunner 299). Brunner develops this argument about scarcity by linking declining standards of living in the United States with overconsumption, rather than overpopulation, in an extended monologue by Mulligan where he introduces the concept of the New Poor.

In this significant passage, scarcity is framed not as an inevitable consequence of human population growth, but as a result of overconsumption and unequal wealth distribution. Like Harrison’s novel, *Stand on Zanzibar* leans heavily on affective fears related to scarcity by imagining “force-grow meat,” “protein capsules,” “unperishable milk,” and “battery eggs” (Brunner 298). Access to food is an equity issue and a major demarcating sign of class in this dystopian future. Mulligan explains that you can recognize this new class of borderline poverty-stricken consumers, the New Poor, by “the fact that they don’t spend—they can’t spend—on the things you add to keep yourself going. They eat mass-produced force-grown meat. So do you, but you add protein capsules and B12. They drink pasteurised unperishable milk. So do you, but you take calciferol tablets. They eat battery eggs. So do you, but you take Vitamin A” (Brunner 298). Adaptability, Brunner shows, is a privilege. Here, Brunner implies that a socioecologically precarious future will impact certain populations more than others, which anticipates how current ecological thinking emphasizes that the negative effects of the climate emergency will be distributed unequally along classed, racial, national, and sexed/gendered lines. Moreover, the novel shows an awareness that this inequality is structural, as Mulligan explains that it is *still possible* for a person to have an abundance of modern conveniences: a full suite of vitamins and supplements, garbage disposal and power saving units, computers and “polyform” furniture. Yet, this is only possible because others will go without: “when I say you could have them, I don’t mean all of you. I mean that if you did, your next-door neighbour wouldn’t, or in the case of big

things on an urban scale, that if your city did the next city along the line wouldn't. [. . .] [W]e are so damned nearly broke on a planet-wide basis" (Brunner 300).

Two Bad Ideas

Although their exposure to harm is not proportionate, Brunner connects the plight of America's "New Poor" to the citizens of the fictional countries Beninia and Yatakang who are subject to the neocolonial resource-extraction and eugenics projects which occupy so much of the novel's attention. His critiques of these programs demonstrate that the causes of social and environmental problems is not human population growth, but Western overconsumption, corporate profiteering, and economically and ecologically exploitative neocolonial arrangements. Moreover, his emphasis on socioeconomic inequality within the context of a global capitalist ecological system counters scarcity-based arguments that naturalize poverty by insisting that the world contains insufficient resources to sustain growing populations. In this way, both programs are framed as misguided attempts to resolve the fundamental contradictions between consumer capitalism and the habitability of the planet without addressing this contradiction head on.

The socioecologically problematic relationship between corporate capitalism, neocolonial expansion, and the environment is explored through the partnership between the transnational corporation called General Technics and the US government to effectively establish an American colony in the fictional West African country Beninia. This development 'partnership' would provide the US with diplomatic influence and stable access to trade, resources, and labour on the continent. In this context, Brunner suggests that the interests between states and transnational corporations are often aligned in plundering the 'underdeveloped' world of both labour and natural resources. During a meeting between representatives of General Technics and the US

government, it is stated clearly and cynically that the endgame is to reinstate the empire-colony relationship, which is characterized by extraction and the creation of financial dependency.

General Technics' representative explains: "State's prepared to buy a fifty-one per cent share in the loan floated to finance the project, but to minimise political repercussions we'll have to do so through front agents. These should keep down complaints about neocolonialism so that by the ten-year mark we can hope for active co-operation from Beninia's neighbours" (Brunner 237).

Here, the conversation about devising a plan to effectively divide the plunders of Beninia's natural wealth echoes the ironic suggestion from earlier in the novel that "the wealth of the planet Earth was inconceivable. Beninia, for the same reason, had a little less than enough to save its people from starving" (Brunner 11). This toxic relationship between (neo)colonial powers, 'underdeveloped' nations, and extractivism is clear in comments that Elihu Masters makes to Norman House about how this project is colonialism masquerading as free-market capitalism: "GTs annual profit is almost fifty times the gross national product of Beninia; they could buy and sell many of the underdeveloped countries" (Brunner 95). Elihu drives home this point during the same conversation by remarking to Norman that he has met the CEO of General Technics, "'and I only need to meet someone once to know if this is the sort of person who'd like to own nine hundred thousand slaves'," which is roughly the population of Beninia (Brunner 97). Once again, Brunner emphasizes the irony in contemporary neo-Malthusian arguments that claim population growth in underdeveloped nations is driving ecological collapse and conflict by showing that transnational corporations and neocolonial governments are rendering the planet increasingly small through their endless expansion and consumption of the planet's 'inconceivable wealth'.

The US-led development project in Beninia shows how resource extraction and neocolonialism create socioecological problems like environmental degradation, poverty, and war, which were often chalked up to human population growth in the 1960s. Early in the novel, the narrator explains that

the population of the planet Earth was numbered in many billions. Beninia, thanks to the slashed-on-a-map boundaries of the colonial government, had only nine hundred thousand of them. The wealth of the planet Earth was inconceivable. Beninia, for the same reason, had a little less than enough to save its people from starving. The size of the planet Earth was ... large enough, so far. (Brunner 11)

By remarking that Beninia is the product of “slashed-on-a-map boundaries of the colonial government,” the passage implies that Beninia’s relative poverty is a legacy of colonialism. The General Technics-US government partnership is an extension of this exploitative history, as I noted above. In this way, Brunner clearly implicates the relative wealth of Western colonial states in the relative poverty of formerly colonized nations like Beninia by highlighting an ironic tension between the planet’s “inconceivable” wealth and that Beninia “had a little less than enough to save its people from starving” (Brunner 11). Importantly, Beninia is poor *despite its small population*, which is roughly 14 times smaller than the population of Brunner’s imagined New York City (13 million). The oversimplifying logic that causally links population to poverty is further ironized in the passage’s concluding phrase: “The size of the planet Earth was ... large enough, so far” (Brunner 11). By emphasizing that *overpopulation is not the cause of Beninia’s relative poverty*, Brunner contradicts contemporary neo-Malthusian arguments that claim population growth is responsible for food insecurity and political instability in ‘developing countries’. Taken in their entirety, descriptions of Beninia in a global and historical context and

the novel's discussion of the General Technics-US government 'development' program in West Africa convey to the reader that it is not overpopulation that is making the planet too small, as Beninia's small population and relative poverty attest. Instead, the insatiable (neo)colonial and capitalist appetite for expansion is simultaneously shrinking the planet and pressing up against fundamental ecological limits, which is implied in the foreboding claim that the planet is "large enough, so far" (Brunner 11).

Brunner shows the second and related major plot in the novel—a global eugenics race to produce superhumans—to be a misguided attempt to address the interrelated problems of scarcity and ecological degradation through population measures. In this context, we can recall the question posed by the narrator: "but are we adopting the right measures to cope?" (Brunner 139). Brunner shows that the clear answer is *no*. Coercive eugenic policies are adopted into mainstream cultural consciousness and medical ethics in the novel. The idea of protecting the human gene pool is used to justify preventing so-called undesirables from reproducing. While eugenics can refer to both curbing population growth as a whole and limiting the reproduction of targeted population groups, Brunner links these two types of eugenics programs in the novel through the notion of scarcity. In this sense, Brunner warns that marginalized populations, especially racialized people and people living with disabilities, are *especially at risk where eugenic policies are concerned*, as a shortage of resources can be used to justify eliminating particular elements of the population. This mirrors neocolonial arguments by 'population experts' and anti-population growth activists who wanted to police the reproductive freedoms of people in non-Western and largely non-White nations.⁶⁹ Today, there is a similar logic at play in xenophobic and what some people are calling 'ecofascist' attempts to limit migration from

⁶⁹ As I explained Chapter Two, this was precisely the charge levelled at Ehrlich and his associates at ZPG. Ehrlich would later renounce his earlier position.

poorer to wealthier nations on the basis of a perceived sense of scarcity (today the evocation of scarcity takes many forms: jobs, space, healthcare, resources, safety).

In *Stand on Zanzibar*, overpopulation anxieties are linked to ecological degradation through the ideas of scarcity and ‘human ecology’. While human ecology is a useful concept for identifying the ways in which human beings interact with non-human life in the ecosystems we cohabit, the concept is also used in the novel by a doctor during a consultation with a young pregnant woman to defend the eradication of ostensibly ‘suboptimal’ traits from the collective human gene pool *based on a perceived sense of scarcity*. The doctor defends eugenic policies based on an ethical dilemma that results from the interaction of several variables: the massive scale of human development, the scarcity of food and natural resources, and the social and environmental impacts of overpopulation. The doctor condescendingly explains to the young woman, Poppy, that eugenics is the only viable solution to overpopulation-led scarcity: “The things that are—as you put it—‘required by law’ are a simple matter of human ecology. With almost a hundred million people in this overcrowded island of ours, it would make very little sense to continue wasting our resources both material and human on such pointless undertakings as training phocomeli or cleaning up after morons” (Brunner 138). Importantly, the doctor suggests that eugenic policies aimed at purifying the existing gene pool are justifiable on the grounds that “this overcrowded island of ours” does not have sufficient resources to continue “training phocomeli or cleaning up after morons” (Brunner 138). Here, human ecology is mobilized as a concept through which the expenditure of resources becomes an ethical question in relation to population growth and human development. Here, as elsewhere, the discourses of scarcity, ecology, and development are bound up with (neo)colonial attitudes and uneven economic development, as the doctor tells Poppy that “all the advanced countries of the world

have come around to this point of view now,” so if she does not want to conform to the legal requirements of child-bearing in “advanced countries,” then she is free to have her child in some undeveloped “country that can’t afford decent medical care for [her] anyway” (Brunner 138).

For Brunner, coercive population control measures and eugenics programs are techno-fixes aimed at resolving economic and socioecological problems (such as real or perceived scarcity and the degradation of ecosystems) without addressing Western consumer capitalism as their root cause. In this sense, Brunner points out that the goal of eugenics programs and coercive population controls is the same as the General Technics-US government partnership to extract wealth from Beninia: to allow corporate capitalism and overconsumption by an exceedingly small minority of the world’s population to keep chugging along in the face of clear ecological limits. Like Ehrlich, Brunner connects exorbitant levels of wealth and consumption by some Westerners with the diminution of Earth’s capacity to support humankind, and in the process, he points out the contradictory neo-Malthusian logic that instead puts the onus on developing nations to limit population growth. One of the clearest examples of Brunner’s critique of eugenics as a techno-fix occurs largely in the context of Donald’s trip to the fictional Southeast Asian country Yatakang. This trip is a pretence for the American government to inquire into the validity of the Yatakangi government’s claim that world renowned Yatakangi geneticist Sugaiguntung has figured out how to genetically reproduce superhumans (this espionage can also be understood as a neocolonial form of intellectual property theft). While this program may not appear to be related to Western scientists’ eugenically manipulating their own populations by eradicating already marginalized people from their ‘overburdened’ society, the novel suggests that the search for superhumans is an unfortunate but natural progression of this same process. Both types of eugenics uncritically assume that scarcity and competition for limited resources are

effects of *population pressures*. The link between creating superhumans and resolving the (supposedly) socioecological consequences of overpopulation is clear in the following passage when Donald expresses disappointment when he learns that the Yatakangi government's claims of a scientific breakthrough are propaganda: "the entire human race seemed momentarily united in a single entrancing dream—the hope that the next generation they would bequeath to Mother Earth would be whole, healthy, sane, capable of making amends for the rape they had inflicted in olden days. The tantalising promise had been made. And it looked as though the promise was a lie" (Brunner 350). A renowned biologist in his own right, Donald hopes that scientific advancements can create a "whole, healthy, sane" generation while "making amends" for historical inequities and ecological exploitation "inflicted in olden days" (Brunner 350). Yet, the novel shows that what Donald and contemporary neo-Malthusians fail to see is that curbing the population (however and wherever we define this) does not address the root cause of the damage inflicted on the planet: the carving up and (inequitably) portioning out of the entire planet in accordance with consumer capitalism's growth imperative. Donald, in other words, falls victim to the same "promise" and "hope" that the novel criticizes: you cannot short-circuit fixing socioecological problems with techno-utopian solutions. As Neal Bukeavich argues, the issue "with genetic engineering is not that it violates some 'natural order' but that the idea of eradicating undesirable behavior through gene manipulation ignores the role that socio-environmental factors play in shaping behavioral traits. Bioengineering emerges both as the ultimate Western fantasy of the technological control over nature" (Bukeavich 65). Brunner, in this context, acknowledges the allure of technological solutions to seemingly intractable problems, but he warns that *we are not adopting the right measures to cope*.

By warning that population control measures, including eugenics, are not the solution to interlocking socioecological problems, Brunner rejects contemporary neo-Malthusianism's (over)emphasis on population growth as the source of global scarcity, poverty, wealth inequality, and ecological degradation. Brunner also reiterates Harrison's and Ehrlich's insistence that the problems noted above—many if not all of which plague us today—are historical in nature and are deeply ingrained in Western cultural understandings of humankind and non-human nature (i.e., that the latter exists solely to fulfill the needs of the former). As I argued in relation to Harrison's novel, this historical emphasis works against the 'naturalizing' elements of neo-Malthusian discourse that suppose population growth inevitably leads to catastrophe. For Brunner, then, hope lies not in quick fixes that enable human beings to continue to extract from the Earth endlessly, if only on a smaller scale. Instead, in the few pages that seem to offer alternatives, he implores his contemporaries who may be in favour of coercive population control measures, including eugenics, to consider placing more emphasis on *teaching human beings to be better* than on *making better human beings* in petri dishes (or getting rid of the ones that are framed as the problem). In the latter stages of the novel, during an interview with the acclaimed Yatakangi geneticist, Sugaiguntung, Donald inquires why the purported method for building superhumans will not work. Sugaiguntung tells Donald that he is looking at the problem too narrowly, and that humans as living and breathing animals are not the problem:

Mr. Hogan, what is a man? Some of him is the message passed down the centuries in a chemical code—but very little. Take a human baby and let it grow among animals as a feral child. At puberty is that a human being, even though it can mate and breed its physical form? No, it's a bad copy of the animal it was raised by! Listen, there is a point on a chromosome which I can touch—I think I can touch—and after fifty, a hundred

failures, I can give a baby forebrain development . . . [but] [w]ho is going to teach that child? (Brunner 404)

Even though Sugaiguntung is a geneticist, which makes his claims here even more impactful, he evokes the importance of education to suggest that our biology is only part of what makes us human. Coded social behaviours and customs, including our economic arrangements and orientations to non-human nature, are more significant causal explanations for how human beings impact each other and our environments than how many of ‘us’ there are. There is no quick technological fix for problems like ecological degradation and wealth inequality, Brunner warns. The novel’s enduring message regarding the population debates, I believe, can be summed up in the words of the humble fisherman who attempts to smuggle Donald and Sugaiguntung to freedom: “what this country needs is not better children but better adults, who could raise their children better anyway” (Brunner 465).

5. Ursula Le Guin’s *The Lathe of Heaven* (1971)

Like Harrison’s and Brunner’s dystopian novels, Le Guin’s *The Lathe of Heaven* (1971) engages in contemporaneous conversations about population growth and environmental degradation. Also in line with Harrison and Brunner, Le Guin does not dismiss overpopulation anxieties outright, but instead she opposes one-dimensional neo-Malthusian arguments that blame human population growth for pushing the planet to the brink of socioecological collapse. Le Guin’s novel advocates for a cautionary approach to devising solutions to the interrelated socioecological problems of the period that it depicts, including global warming, scarcity, socioeconomic inequality, and war. While her novel resembles Brunner’s in its anxiety about repeating the mistakes of the past if we fail to learn from them, *The Lathe of Heaven* is formally

unique among dystopian fiction for its portrayal of multiple undesirable futures, which allows her to show that even the most utopian dreams can end as dystopian nightmares if we try to solve socioecological, economic, and political problems with solutions that are instrumentalist, anthropocentric, and potentially totalitarian. In this context, we can understand the novel's protagonist's insistence that "all we have is means" (Le Guin 83) to be advocating for a prefigurative rather than utilitarian model of political dreaming: the means used to advance our political and environmental goals are not of secondary importance to the ends, as a prefigurative political ethic commits to "the embodiment, within the ongoing political practice of a movement, of those forms of social relations, decision-making, culture, and human experience that are the ultimate goal" (Boggs 100). Hence, Le Guin advocates for an ecocentric view—premised upon an avowed *anti-anthropocentrism* and *anti-instrumentalism*—as a necessary precondition to any sane response to intersecting socioecological, political, and economic problems.

After discussing the criticism on the novel, my reading begins by showing how the novel engages with overpopulation and environmental discourses, and how Le Guin carefully rejects the assumption that reducing the human population will result in a more safe and ecologically stable planet. The second section focuses on how the novel's structure parallels Ehrlich's presentation of three alternative futures in *The Population Bomb*, and how this enables Le Guin to stage debates and offer contending perspectives on potential outcomes for the future(s). While these debates are largely waged in conversations between George Orr and Dr. Haber, Orr's dreams that are controlled by Haber produce progressively more dystopian futures that dramatize the pitfalls of instrumentalist and anthropocentric approaches to resolving problems related to overpopulation and ecological degradation. Here, Le Guin's novel resembles Horkheimer's and Marcuse's insistence that modern consumer culture conceives of non-human nature "as a mere

tool of man,” all too often “bent to the requirements of capitalism” (Horkheimer 74; Marcuse 60). The debates related to the socioecological issues that are of central importance to the novel are dramatized in Orr’s dreams, which I argue we can think of as experimental scenarios where propositions and worldviews are tested. Each of these dream-experiments is complicated by the means/ends ethical dilemma that I note above, as Orr warns that even the most noble ends can be perverted by the wrong means, because “means are all we’ve got” (Le Guin 156).

Criticism

Several critics, especially earlier readings of the novel (Watson 1975; Johnston 1999), have emphasized *The Lathe of Heaven’s* meta-literary and intertextual elements to the surprising exclusion of its environmental concerns. This critical commonplace is likely the result of interpretations of the novel as part of the ‘Orwellian’ tradition, which often means political in nature rather than environmental.⁷⁰ In this context, critics have tended to focus on the mutability of the past in the novel, and how the power dynamics between Orr and Haber resemble Winston and O’Brien’s relationship. Although Ian Watson claims that the novel is written in the Philip K. Dick tradition of ‘false reality’ stories, he nevertheless reads *The Lathe of Heaven* from an Orwellian perspective (Watson 67). For Watson, the key element of the novel is how this ‘false reality’ constantly rewrites and therefore invalidates the historical record. The novel’s protagonist, George Orr, ‘dreams effectively’: his dreams alter the material reality of the present by changing the past. His psychologist, Dr. Haber, can manipulate Orr’s dreams against his wishes, which gives Haber the power to change the past and present. Much as Winston Smith’s job at the Ministry of Truth is to alter the historical record to ensure that the past coheres with the

⁷⁰ Orwell’s “gravitational pull,” Booker has noted, shaped an entire generation of dystopian fiction and criticism (Booker, “SF” 172).

Party's officially sanctioned version of history, Orr's dreams "replace history with false histories that become objective truth, only to be overthrown and modified by further dreams as his well-intentioned yet power-hungry psychiatrist manipulates him" (Watson 67). In this sense, power (which I have suggested has a double meaning) is the means through which history is manipulated, recorded, and consolidated in both Le Guin's and Orwell's novels. Watson's consideration of the novel's environmental concerns or anxieties, however, is limited to the vague idea that *The Lathe of Heaven* "might seem to represent a warning against overmuch 'scientific meddling' in the world about us, since Dr. Haber demonstrably ends up as the archetypal 'mad scientist'" (Watson 72).

Laura Johnston also emphasizes the novel's relationship to Orwell's dystopian classic. Apart from the more obvious allusions, such as George Orr's name and references in the novel to dreams set in the year 1984, Johnston argues that Le Guin follows Orwell in querying "the themes of love, power, and the mutability of the past" (Johnston 351). Following Orwell, Le Guin's novel emphasizes the affective experiences of privation in the future, which Johnston argues is evident in both dystopian futures where "most people live in cramped, dilapidated apartments, live on very little, very tasteless food; and generally lead drab, boring, restricted lives in the midst of global war" (Johnston 351). Johnston further notes that both plots develop along the lines of a 'love triangle' as the male protagonists struggle against imposing and scientifically minded antagonists, all the while attempting to nurture romantic connections. Like Watson, Johnston is arguably most concerned with Le Guin's representation of the relationship between historical fact and power: "one can read the effective dreams of George Orr as a literalization of *Nineteen Eighty-Four*'s conceit of the mutability of the past" (Johnston 353). Yet, Johnston overlooks what I argue is a significant difference between Orwell's and Le Guin's

construction of the relationship between the past, present, and future: dreams in *The Lathe of Heaven* are less about changing the past in an Orwellian sense than they are about deliberating on the desirability of alternative *futures* and, importantly, *on the means by which we attempt to get there*. In this way, Le Guin's novel breaks with the traditional dystopia's sense of closure and claustrophobia, which is often associated with Orwell's novel. Here, by resisting closure, *The Lathe of Heaven* resembles what I argued are the hopeful elements in Carson's and Ehrlich's texts and appears to anticipate the emergence of the critical dystopia in subsequent decades.

Critics have more recently commented on *The Lathe of Heaven's* environmental content, which is unsurprising given both Le Guin's reputation as an environmental SF writer and the overwhelming popularity of dystopian fiction in recent years.⁷¹ While neither Adam Trexler's *Anthropocene Fictions: The Novel in a Time of Climate Change* (2015) nor Axel Goodbody and Adeline Johns-Putra's collection *Cli-Fi: A Companion* (2019) discuss Le Guin's novel in any detail, both books refer to *The Lathe of Heaven* (1971) as the first dystopian novel to openly discuss anthropogenic global warming (Trexler 8; Goodbody and Johns-Putra 3). Other critics who have recently discussed the novel have noted that while it engages with popular overpopulation anxieties from 1960s and early 1970s, it does so only to subvert readers' expectations by pointing instead to apparently more pressing issues. According to Brittney Harrington, while the novel is concerned with "a dismal future with pollution, runaway greenhouse effect, and overcrowding," it is more preoccupied with how "other societal issues, like classism, racism, and abuse of power, [have] caused the problems of the future more than overpopulation" (Harrington 41-42). Harrington is right to argue that Le Guin foregrounds these

⁷¹ Rob Latham, for example, has argued that we must understand Le Guin's writing during the period in the context of the burgeoning environmental movement and her acknowledgement of how ecological degradation was linked to imperialist wars like the Vietnam War through the use of chemical herbicides and defoliants (Latham 87).

issues in the novel, which I would suggest are socioecological rather than simply social (for example, how middle-class patterns of consumption perpetuate ecological degradation or how racialized people are disproportionately exposed to environmental harms across North America), but she does not fully develop these connections in her short reading of the novel. Claeys has also recognized that the text engages with contemporaneous overpopulation discourse, yet he claims that it downplays the severity of the problem: “while its central premise . . . includes socio-political-environmental themes like overpopulation, . . . it is suggested that overpopulation is not so severe a problem, that Americans can adjust to a reduced standard of living, and that much of the ‘excessive dread of overpopulation—overcrowding’ is ‘an inward state of mind’” (Claeys, *DANH* 469). While Harrington and Claeys helpfully suggest that Le Guin redirects readers’ attention away from overpopulation and toward more pressing social, political, and environmental issues (or *socioecological issues*), I argue that Le Guin takes overpopulation more seriously than either of these critics allow. Yet, the novel suggests that the first step to an alternative future should not be to limit population growth, but to uproot instrumentalist and anthropocentric attitudes that are used to justify “the murder of the creatures of the Earth in the name of ‘man’” (Le Guin qtd. in Latham 87). In this way, she critiques the neo-Malthusian tendency to reduce the causes of ecological degradation to human population growth, and instead the novel advocates for a shift in how human beings interact with and think about non-human nature.

City Spaces: Global Warming, Environmental Degradation, and Overpopulation

Situating the novel’s imagined dystopian future within the context of growing environmental anxieties in the 1960s and early 1970s, Le Guin acknowledges the dramatic

effects of greenhouse gas emissions in the first few pages of the novel. In his office, Dr. Haber gazes at a mural on the wall and wonders “when such a photograph had been taken. Blue sky, snow from foothills to peak. Years ago, in the sixties or seventies, no doubt. The Greenhouse Effect had been quite gradual, and Haber, born in 1962, could clearly remember the blue skies of his childhood. Nowadays the eternal snows were gone from all the world’s mountains” (Le Guin 7). Importantly, Le Guin suggests that these shifts began to occur around 1960s and 1970s, which overlaps with the emergence of widespread environmental anxiety that was spurred by books like Carson’s *Silent Spring* (1962) and Ehrlich’s *The Population Bomb* (1968). Yet, like Harrison’s novel, *The Lathe of Heaven* conveys that a warmed climate is altogether *unremarkable* for the novel’s characters in this imagined future, as these changes that have occurred slowly and over time, such as the disappearance of the “eternal snows . . . from all the world’s mountains” (Le Guin 7). In the following passage, the narrator explains how humankind failed to address global warming and pollution quickly enough. Note, too, Le Guin’s reference to overpopulation by referring to Portland as a vertically expanding city, which resembles the description of New York as “writh[ing] upward” in *Make Room! Make Room!* (Harrison 11):

He [Orr] struggled off at the East Broadway stop, and shoved along for four blocks through the ever-thickening off-work crowd to Willamette East Tower, a great, showy, shoddy shaft of concrete and glass competing with vegetable obstinacy for light and air with the jungle of similar buildings all around it. Very little light and air got down to street level; what there was was warm and full of fine rain. Rain was an old Portland tradition, but the warmth—70° F. on the second of March—was modern, a result of air pollution. Urban and industrial effluvia had not been controlled soon enough to reverse

the cumulative trends already at work in the mid-Twentieth Century; it would take several centuries for the CO₂ to clear out of the air, if it ever did. (Le Guin 27-28)

Portland's description as overcrowded and warm not only resembles Harrison's novel, which she may have had in mind when writing that "New York was going to be one of the larger casualties of the Greenhouse Effect," but language like "a great, showy, shoddy shaft of concrete and glass" used to describe Portland's infrastructure echoes "the ideal [world] set up by the Party" in *Nineteen Eighty-Four* as "something huge, terrible and glittering—a world of steel and concrete" (Orwell 77). Here, Le Guin seems to operate within the same tradition as Orwell, Vonnegut, and Bradbury who all evoke negative images of modernization that encourage the reader to question if industrial development is inherently 'progressive,' such as when the narrator claims that "rain was an old Portland tradition, but the warmth . . . was modern" (Le Guin 27). Importantly, as I suggest above, the novel does not dismiss overpopulation anxieties or depict overpopulation as separate from global warming and pollution; rather, she introduces overpopulation as a key element of this unsettling portrait of the future American West Coast where "ever-thickening . . . crowd[s]" wade through "urban and industrial effluvia" (Le Guin 27-28).

Le Guin flips the causal logic of neo-Malthusianism which posits that population growth leads to conditions of scarcity and moral decay in urban centres by imagining crowded new cities that have emerged since the 1960s *in response to* global warming and new climate conditions. In other words, *if* the poor conditions in these new cities are related to human population growth, then the cause is climate-related human displacement. The text appears prescient in this sense, as the twenty-first century has seen and will continue to see massive amounts of migration caused by the effects of the climate emergency. The new climate conditions in Le Guin's dystopian

future (caused by “urban and industrial effluvia”) have produced scarcity of water and land, which has resulted in adaptive agricultural methods and consequent demographic changes:

The new Cities—Umatilla, John Day, French Glen—were east of the Cascades, in what had been desert thirty years before. It was fiercely hot there still in summer, but it rained only 45 inches a year, compared with Portland’s 114 inches. Intensive farming was possible: the desert blossomed. French Glen now had a population of 7 million. Portland, with only 3 million and no growth potential, had been left far behind in the March of Progress. (Le Guin 27-28)

Here, Le Guin hints for the first time that this dystopian climate future was caused not by overpopulation, but the “March of Progress” (Le Guin 28). Again echoing Vonnegut’s critique in *Player Piano* (1952) of how progress is often narrowly defined in terms of industrial development and energy consumption, irrespective of its effects on human beings, Le Guin’s narrator evokes “the March of Progress” ironically to emphasize the destruction left in its wake. The narrator asks “what difference did [the ‘march of progress’] make? Undernourishment, overcrowding, and pervading foulness of the environment were the norm. There was more scurvy, typhus, and hepatitis in the Old Cities, more gang violence, crime, and murder in the New Cities. The rats ran one and the Mafia ran the other” (Le Guin 28). By claiming the “rats ran one and the Mafia ran the other,” *The Lathe of Heaven* shares *Make Room! Make Room!*’s depiction of the ‘modern’ city as decaying because of poor state capacity (lack of food, health care, policing). The novel implies that the Old and New Cities are equally plagued by socioecological problems (if different ones), yet they range dramatically in size—French Glen’s population is more than *double* Portland’s. It seems more likely, in this context, that the crime

and squalor of future cities are products of political failings and climate disruptions, rather than human population growth.

The Lathe of Heaven shows that how human beings interact with non-human nature is a more significant indicator of environmental wellbeing than human population numbers. While Orr is anxious about overpopulation, he appears to be most concerned with how human beings have impacted non-human nature. He is especially anxious about anthropogenic effects on what are commonly thought of as traditionally natural spaces, such as forests and rivers. He tells Haber that he longs to be out of the city and away from all the people: “‘it’s more the city, the crowding, I mean. Too many people everywhere. The headlines. Everything. ... I daydream about having a cabin somewhere outside the cities, maybe over in the Coast Range where there’s still some of the old forests’” (Le Guin 33). Though this might initially sound like an anthropocentric fantasy to escape the overcrowded city to a frontier-type environment that allows more freedom and comfort, it becomes clearer as the passage develops that Orr’s principal concern is the *crowding out* of ‘nature’. In other words, Orr’s nightmare reflects an anxiety about the domination of non-human nature that is inherent in an anthropocentric and instrumentalist worldview that conceives of ‘nature’ as *only a frontier for human expansion*. Here, Le Guin’s novel echoes Horkheimer’s excoriating comments in *Eclipse of Reason* (1947) about how non-human nature, “more than ever conceived as a mere tool of man,” has become “the object of total exploitation” under “Man’s boundless imperialism” (Horkheimer 74). The narrator, for example, explains that

The Willamette [River] was a useful element of the environment, like a very large, docile draft animal harnessed with straps, chains, shafts, saddles, bits, girths, hobbles. If it hadn’t been useful of course it would have been concreted over, like the hundreds of little

creeks and streams that ran in darkness down from the hills of the city under the streets and buildings. But without it, Portland would not have been a port. (Le Guin 38)

The river is described as “useful” twice in this passage, which conveys Le Guin’s objection to how non-human nature’s value has become reduced to its usefulness to human beings (Le Guin 38). This point is emphasized by the cynical remark that if the river did not make life more efficient and easier for human beings, it would simply be “concreted over” (Le Guin 38). Here, as Marcuse writes in *Counterrevolution and Revolt* (1972), “nature appears as that which capitalism has made of nature: matter, raw material for the expanding and exploiting administration of men and things” (Marcuse 62). To get across this (useful) river, Orr must take the subway, and it is during the experience of crossing the body of water described as an enchained animal that his unhappiness is described: Orr “swayed as he stood holding a swaying steel handle on a strap among a thousand other souls. He felt the heaviness upon him, the weight bearing down endlessly. He thought, I am living in a nightmare, from which from time to time I wake in sleep” (Le Guin 38). The “heaviness” that Orr feels “upon him, the weight bearing down endlessly,” parallels the description of the river as an enchained animal. Orr is bothered by both the “thousand other souls” and the weight of Portland’s impact on the non-human environment (Le Guin 38). The passage encourages the reader to think about how the domination of non-human nature (the body of water, animals) also produces negative effects for human beings, as we are unassailably part of this very ‘nature’ that is enchained, concreted over, and dominated. Le Guin, in this way, displays a shared understanding with Marcuse about how domination is a dialectical process whereby human domination over non-human nature results in the domination of human beings, as Marcuse explains using language that is remarkably similar to Le Guin’s in the passage above: “The pollution of air and water, the noise, the encroachment of industry and

commerce on open natural space have the physical weight of enslavement, imprisonment. The struggle against them is a political struggle: it is obvious to what extent the violation of nature is inseparable from the economy of capitalism” (Marcuse 61). Like Marcuse, then, Le Guin seems to encourage the reader to consider: “does this image of nature conform to that of a free society?” (Marcuse 62).

The novel further complicates the idea that human population growth is directly responsible for the world’s socioecological problems, such as ecological degradation, pollution, scarcity, and conflict, by depicting a future without overpopulation that is nonetheless plagued by these problems. After Orr and Haber discuss Orr’s anxieties about overpopulation that I note above, Haber encourages Orr “to have a dream in which you feel uncrowded, unsqueezed” (Le Guin 60). Orr’s ‘effective dreaming’ cuts the human population by roughly 6 billion people. While it is true that the global population decrease results in greater food security than exists at the novel’s outset—the reader learns that after the first great population culling Orr’s fridge contained “more food in it than he had ever seen in a private refrigerator in his life” (Le Guin 79)—any positive reading of this situation is undercut by the loss of life and continued socioecological problems that characterize this new, de-populated future. The narrator explains that after “The Crash,” which was “the carcinomic plague which had reduced human population by five billion in five years, and another billion in the next ten,” the world “had not changed . . . radically: only quantitatively” (Le Guin 80). In other words, there are fewer people (quantitative difference), *but the same problems persist* (the world had not changed dramatically). The world remains on the brink of nuclear annihilation and the global environment is thoroughly degraded. Likewise, “the air was still profoundly and irremediably polluted: that pollution predated the Crash by decades, indeed was its direct cause. . . . There were no songbirds any more, either” (Le

Guin 80). The reduction of the global human population by 80% did not resolve the ecological problems caused by the historical accumulation of emissions and their delayed effects (in fact, it was this ‘pollution’ that caused the plague), which have also dramatically impacted non-human nature, as the allusion to Carson’s *Silent Spring* suggests (i.e., all the songbirds are dead). Moreover, Le Guin’s objection to blaming overpopulation alone for socioecological problems is reiterated in this future’s depiction of another familiar trope from overpopulation discourse: too many mouths to feed leads to conflict. However, the narrator explains that “the effects of the Plague . . . hadn’t prevented war from breaking out,” and the war “in the Near East was more savage than it had been in the more crowded world”; not only are wars more frequent and more barbaric after the Crash, nuclear annihilation (still) looms because there are now “twelve Nuclear Powers in all, six to a side” (Le Guin 81). This future clearly shows that Le Guin is unconvinced by neo-Malthusian arguments that suppose fewer people will necessarily result in a safer political environment or healthier planetary ecology. In fact, the references to the potential for global nuclear war and “tanks and planes spray[ing] fire in the air and cholera in the water” implies that Le Guin worries we may find ourselves *worse off* if the wrong measures are taken to address our existing social, economic, and environmental problems (Le Guin 81).

Dialectical and Dialogical Structure: The Form and Content of Orr’s Dreams

Le Guin adopts a dialectical and dialogical rhetorical mode in *The Lathe of Heaven* that resembles Ehrlich’s three scenarios in *The Population Bomb* (1968) by cleverly staging conversations between Orr and Haber that allow her to pose and tentatively answer important questions related to ecological degradation and overpopulation, the relationship between human beings and non-human nature, and the nature of political advocacy and how we might imagine a

better future. This similarity between Le Guin's and Ehrlich's rhetorical strategies is evidence of the broader affinities between popular environmental thinking and writing and dystopian fiction that I have discussed throughout this dissertation. Le Guin's speculative futures are dialectical because they build on each other, maintaining and excluding certain elements, to advance nearer to Haber's utopian vision of the future. The novel's central debates develop through a type of call-and-response: a problem is identified (e.g., overpopulation, racism, war) and a future without this problem is dreamt into being by Orr at the instruction of Haber. Orr's dreams create a textual space that serves as a terrain for Le Guin to test the logical validity of certain hypotheses regarding social, political, and environmental change: should human beings decide what is best for the planet? Are political goals more important than the means used to achieve them? Do some well-intentioned human beings have the right to decide what is best for 'everyone'? Is it justifiable to sacrifice the needs of the few for the needs of many? These questions remain relevant to environmental debates today.

In Le Guin's novel, dreaming resembles the speculative logic of Ehrlich's three scenarios. The dreams provide a textual space where key issues can be extrapolated into the future and explored in greater detail. Importantly, these dream-futures extrapolate real issues that are latent in the present. In this context, we can understand Orr's dreams as more than simply apocalyptic visions of the future; rather, like Ehrlich's three scenarios, Orr's dreams are potential futures that Le Guin imagines might emerge from the broader milieu of the late 1960s and early 1970s. Whereas Ehrlich, for example, imagines nuclear conflict resulting from the use of chemical pesticides after international treaties forbid their usage, the global spread of infectious disease, and global famine, Le Guin's protagonist dreams into fruition futures that are

characterized by global nuclear war, a mass plague event, the eradication of racial heterogeneity, and the widespread use of eugenics.

One of the novel's defining debates is the extent to which human beings should control and manipulate non-human nature: should non-human nature be treated as merely material for human development? Are human beings capable of deciding what is best for the planet? This debate balances anthropocentric and ecocentric worldviews. Tony Burns is right to suggest that "Haber represents what Le Guin refers to as the 'Judeo-Christian-Rationalist' Western tradition, which is also, of course, the scientific tradition, committed to the idea of controlling first nature then society" (Burns 225). It is also this tradition that Horkheimer points to in *Eclipse of Reason* as initiating a troubling schism between human beings and non-human nature, since the "exploitation of nature can be traced back to the first chapters of the Bible. All creatures are to be subject to man. Only the methods and manifestations of that subjection have changed" (Horkheimer 43).⁷² For Le Guin, the fantasy of controlling non-human nature is deeply anthropocentric and often entails an instrumentalist application of science and technology, beneath the surface of which lies a totalitarian impulse to assimilate the non-human world to human desires: "the man of science knows things in so far as he can make them. In this way their potentiality is turned to his own ends" (Adorno and Horkheimer 9). This view is juxtaposed in the novel by an ecocentric worldview that is represented by characters like Orr and his partner Heather Lelache. Lawrence Buell characterizes an ecocentric position as "a call to fellow humans to recognize the intractable, like-it-or-not interdependence that subsists between the

⁷² Horkheimer will subsequently add in *Eclipse of Reason* that this "modern insensitivity to nature is indeed only a variation of the pragmatic attitude that is typical of Western civilization as a whole. The forms are different. . . . The fate of animals in our world is symbolized by an item printed in newspapers of a few years ago. It reported that landings of planes in Africa were often hampered by herds of elephants and other beasts. Animals are here considered simply as obstructors of traffic" (71).

human and the nonhuman and to tread more lightly on the earth” (L. Buell, *Future* 102). In contrast to the Enlightenment notion of freedom as overcoming ‘nature,’ Lisa Garforth argues that an ecocentric position “can be understood as emancipatory insofar as this decentring of the human as the epistemological and ethical centre of the world involves an expansion rather than a contraction of possibilities for self-realisation and ‘the good life’” (Garforth, “Beyond” 395).

In contrast to Brunner’s sardonic and polemical style, Le Guin’s consideration of humankind’s role on the planet is more measured and dialogical, as the novel balances Haber’s and Orr’s anthropocentric/instrumentalist and ecocentric worldviews respectively. From a socioecological perspective, the debate circles around what humankind’s role ought to be in shaping the planet: what ought—or ought not—our dreams look like? In this way, the text anticipates a great deal of subsequent environmental debate, as it questions the viability and ethicality of human stewardship over the planet. Despite the novel’s clear opposition to the instrumental use of non-human nature for human ends, it is frequently emphasized that Haber’s *intentions are good* when he manipulates Orr’s dreams. As Orr explains to LeLache, Haber is “not an evil man. He means well. What I object to is his *using me as an instrument, a means*—even if his ends are good” (Le Guin 45, emphasis added). Orr reiterates this point later in the novel, suggesting that Haber is “not a mad scientist . . . It’s the chance of power that my dreams give him that twists him around. He keeps acting a part, and this gives him such an awfully big part to play. So that now he’s using even his science as a means, not an end. . . . But his ends are good, aren’t they? He wants to improve life for humanity. Is that wrong?” (Le Guin 75). In other words, Haber is not an inherently evil figure (as is so often portrayed in dystopian fiction). He wants to “improve life for humanity,” but rather he is seduced by the power offered by technoscientific instrumental rationality that perceives the world as an object to be moulded to fit

human desires (Le Guin 75). Haber later expresses exactly this idea to Orr, telling him that humankind's "very purpose on earth [is] to do things, change things, run things, make a better world" (Le Guin 83). As Orr will eventually express, however, it is *not enough* that Haber's ends are good. For Orr, "all we have is means" (Le Guin 83), which is prefigurative way of political dreaming that refuses to sacrifice means in the name of supposedly good ends. This prefigurative ethic is important for initiating lasting change because, as Anton Törnberg argues, "historical lesson[s] [show] that movements that do not keep their practice in line with the revolutionary values they [seek] inevitably end up reproducing the system they are trying to overthrow" (Törnberg 85). In this sense, for Orr, *the means are the ends*, so despite Haber's apparently 'good ends,' his anthropocentric belief that humans are justified in adopting an instrumentalist use of science—which includes, as Orr says, "using me as an instrument" (Le Guin 45)—corrupts any potential good he may hope to do. While Orr initially struggles to articulate a precise alternative to Haber's dreams of total control, he eventually says to Haber that "I don't know if our life has a purpose and I don't see that it matters. What does matter is that we're a part. Like a thread in a cloth or a grass-blade in a field. It is and we are. What we do is like wind blowing on the grass" (Le Guin 83). Here, Orr refuses to accept the anthropocentric belief that human beings are on earth to "run things," and instead he conveys an ecocentric position that removes humankind from the centre of the order of things (Le Guin 83). Orr implies that human beings are part of a larger organic whole, which we should strive to participate in rather than control.

In *The Lathe of Heaven*, the debate between anthropocentric and ecocentric worldviews hinges on how human beings ought to relate to non-human nature. In this way, it is an inherently ecological debate. Orr, on the one hand, argues that human beings ought to more humbly occupy a place on Earth within the broader matrix of non-human nature; Haber, on the other hand,

exhibits what the novel shows to be a god-complex by arguing that humankind should dedicate itself to the goal of absolute control over physical reality. Orr's position becomes increasingly clear after he unintentionally—under Haber's control—'dreams' (invents) aliens on earth. He insists that human beings must resist the totalitarian impulse to try to play god by recognizing that we are only one component part of a complex planetary ecosystem. He thinks, "I'm a part of it. Not separate from it. I walk on the ground and the ground's walked on by me, I breathe the air and change it, I am entirely interconnected with the world" (Le Guin 155). As this inner monologue continues, he reflects that as humans we must accept limits to our actions because we are necessarily fallible, which means that our actions affect each other and the planet in ways that exceed our limited comprehension: "it's not right to play God with masses of people . . . [and] just believing you're right and your motives are good isn't enough. . . . He [Haber] isn't in touch. No one else, no thing even, has an existence of its own for him; he sees the world only as a means to his end. It doesn't make any difference if his end is good; means are all we've got" (Le Guin 155-156). For Orr, the embeddedness of human beings in the wider world is central to careful stewardship, which in this context is better captured by the term *belonging*: being of the whole and not against it. "Careful of the world," Orr explains to Haber: "You must learn the way. You must learn the skills, the art, the limits. A conscious mind must be part of the whole, intentionally and carefully—as the rock is part of the whole unconsciously" (Le Guin 167-168).

The novel portrays an instrumentalist and anthropocentric worldview as a type of god-complex that dangerously fails to acknowledge any limits to humankind's ability to manipulate the planet for human ends. The notion of 'playing god' first emerges not with Haber, but rather during a conversation between Lelache and Orr. Lelache tries to help him thwart Haber's attempts to manipulate his dreams and, in the process, she helps Orr to 'dream' that Haber is

“benevolent” and that “the Aliens aren’t out there on the Moon any longer” (Le Guin 108).

While Lelache wants to help Orr, she is uncomfortable with the idea of ‘playing god’ because she shares his ecocentric worldview as “a person who believes, as she did, that things fit: that there is a whole of which one is a part, and that in being a part one is whole: such a person has no desire whatever, at any time, to play God” (Le Guin 108). Despite her discomfort in playing this role, she does help Orr ‘dream’ that the potentially hostile aliens are no longer on the moon. Le Guin, however, once again emphasizes that the best intentions can nonetheless lead us astray, which is underscored by Lelache’s unimpeachable character in the novel, as her control of Orr’s ‘dream’ fares no better than Haber’s. The aliens *do leave the moon*, but they head for Earth. The aggressive human response, unfortunately, is to assume that the aliens are hostile, and the American military proceeds to destroy its own cities and people through friendly fire.

Despite Haber’s initially ‘good ends,’ the pitfalls of ‘playing god’ are evident throughout the novel in his failed attempts to control Orr’s dreams. Haber remains convinced that ‘playing god’ is both possible and desirable, despite uniformly unsuccessful results. However, he explains to Orr that he is close to perfecting his method of controlling his dreams, which will provide Haber with *total control over physical reality*. He explains to Orr, ““When the Augmentor synchronizes the generalized e-state pattern with my own d-state, such dreams will be effectivized. And then—and then—’ . . . ‘Then this world will be like heaven, and men will be like gods!’” (Le Guin 148). Yet, the novel warns that this desire for total control over physical reality—when “men will be like gods!”—will consume human and non-human nature alike (Le Guin 148). By developing these connections between the domination of human and non-human nature in novel, Le Guin frames Haber’s faith in progress and desire for total control as paradoxically unattainable, since “the will to power must increase with each fulfillment, making

the fulfillment only a step to a further one. The vaster the power gained, the vaster the appetite for more. As there was no visible limit to the power Haber wielded through Orr's dreams, so there was no end to his determination to improve the world" (Le Guin 131). In this sense, both the dream of total control and the March of Progress that is evoked earlier in the novel (ironically, by associating 'the modern' with industrial emissions) *can never be complete*. Here, the novel's anxiety about the lack of fundamental limits to the anthropocentric and instrumentalist desire to dominate non-human nature echoes Horkheimer's anticipation of Anthropocene discourse when he declared in 1947 that "the dominion of the human race over the earth has no parallel in [the] epochs of natural history" (Horkheimer 74). Despite Haber's "determination to improve the world," human beings and non-human nature are considerably worse off in the dystopian futures that result from Haber's "using" Orr's dreams "as an instrument" to "improve the world" than when the novel began (Le Guin 45, 131). These futures entail escalating global conflict; the spread of a carcinogenic plague caused by widespread environmental pollution; the death of roughly 6 billion people; mass starvation; and eugenics programs that eradicate racial differences to solve racism and the criminalization of certain biological traits and predispositions (Le Guin 45). Like Brunner's *Stand on Zanzibar*, eugenics becomes a major concern in *The Lathe of Heaven* as the novel nears its conclusion. The novel portrays eugenics and coercive population measures as the apogee of Haber's desire for total control—for "men [to] be like gods!" (Le Guin 148)

Means and Ends: The Problem with the 'Population Problem'

The novel's objection to eugenics encapsulates Le Guin's critiques of anthropocentrism, instrumentalism, and the faith in progress that are used to justify the desire for progressively

greater control over the planet. It also demonstrates her engagement with contemporaneous debates about the so-called ‘population problem.’ By framing eugenic solutions to human population growth as utilitarian (“the greatest good for the greatest number”), Le Guin flags for the reader the potential pitfalls of ends-based political dreaming: she warns that if one believes that the ends necessarily justify the means, then all actions, including the elimination of ‘undesirable’ populations, are justifiable (Le Guin 136). As the novel progresses, Haber’s will to power and instrumentalist drive increase in scope as he manipulates Orr into dreaming eugenic projects on a mass scale. Responding to Orr’s apprehensions, Haber responds:

In the few weeks that we’ve worked together, this is what we’ve done. Eliminated overpopulation; restored the quality of urban life and the ecological balance of the planet. Eliminated cancer as a major killer. [. . .] Eliminated war. Eliminated the risk of species deterioration and the fostering of deleterious gene stocks. Eliminated—no, say in process of eliminating—poverty, economic inequality, the class war, all over the world. [. . .] Progress, George! We’ve made more progress in six weeks than humanity made in six hundred thousand years! (Le Guin 146-147)

While many of these claims are factually true, they are also absurd in another sense. Despite all of this ‘progress,’ the novel shows that the people living in these dream futures—to say nothing of the billions of people who died so the quality of urban life could be restored—are still oppressed. Much as ‘solving’ species deterioration, ironically, by ‘deteriorating’ the human population by 6 billion, or ‘solving’ racism through the tongue-in-cheek solution of turning the remaining human population grey, the resolution of ‘population problems’ through eugenics is shown to be oversimplifying and morally abhorrent: Haber ultimately instructs Orr to imagine a eugenic future where the “incurables, the gene-damaged” are liable to arrest and extermination

(Le Guin 141). The criminalization of propagating with what Haber considers to be less than desirable genetic traits is defended by the principle that *what is best for the whole the rest must suffer*: “Over the pillared portico, incised in white concrete in the straight Roman capitals whose proportions lend nobility to any phrase whatsoever, was the legend: THE GREATEST GOOD FOR THE GREATEST NUMBER” (Le Guin 136). Le Guin’s representation of eugenics resembles Brunner’s by showing how overpopulation anxieties linked to a perceived sense of scarcity can be used to justify the establishment of an entire class of ‘undesirables’. To Orr’s horror, Haber defends the use of eugenics because of a perceived sense of scarcity of space, time, and resources: “we simply have no room for the incurables, the gene-damaged who degrade the species; we have no time for wasted, useless suffering” (Le Guin 141). For Haber, it is just to decide who lives and who dies in the name of progressing the human species through “the use of controlled violence for the good of the community” because “the future will justify it” (Le Guin 141). Haber attempts to justify *unethical* actions in the present (*the means, i.e., the controlled use of violence*) by evoking the image of a better future (*the ends, i.e., a purer species*). This inverts how the future anterior has been discussed in this dissertation as a rhetorical means by which scientists, politicians, authors, and environmental activists have warned that the future will look back and condemn our poor choices in the present. For Le Guin, our actions in the present inevitably produce the future that is to come, since “all we have is means” (Le Guin 83). Here, Le Guin’s novel makes an interesting point not only about *how to avoid dystopia*, but also about what it means *to imagine utopia*: her emphasis on the means rather than the ends of political dreaming suggests that if we want to make a better world, then it is better to have the right process than it is to have the right blueprint. In this way, Le Guin anticipates what Kim Stanley Robinson argues is the hardest part about writing about utopia: “We can imagine utopia; it’s as

easy as pie. The constraints are very slack, and our imaginations are strong. . . . The problem, however, with this and all other utopian alternatives, is that we can't imagine how we might get there" (Robinson, "Utopia" 8-9).

Like Harrison's *Make Room! Make Room!* and Brunner's *Stand on Zanzibar*, Le Guin's *The Lathe of Heaven* complicates the neo-Malthusian assumption that population growth is solely (or even primarily) responsible for ecological degradation, scarcity, conflict, and global poverty. Whereas Harrison's and Brunner's novels show how *historical* relationships related to settler colonialism and imperialism combined with modern consumer capitalism to thoroughly degrade local and global ecosystems in the *future*, Le Guin's depiction of a warming world points the finger at deep-seated Western cultural worldviews like anthropocentrism and the Enlightenment faith in instrumental rationality and endless scientific progress. Of the three novels, however, Le Guin's offers the clearest sense of what an alternative might begin to look like. By emphasizing the means rather than the ends of political dreaming, *The Lathe of Heaven* advocates for a prefigurative understanding of socioecological and political change. For Le Guin, this means ecocentric rather than anthropocentric relations between humans and non-human nature; it means a refusal to use human beings and non-human nature as tools in service of historical, scientific, or economic progress. It is in this context that we can understand Haber's self-inflicted demise, as his supposedly progressive goals are revealed to be a false hope. While he believes that he can control external reality through the rationalization of the dreaming process, he fails, and he does irreparable harm to the planet and the human population. His dream of progress literally and metaphorically melts into air, as mountains crash into the sea and super-volcanoes erupt and liquefy the city's skyscrapers (Le Guin 171). An Icarus figure, he is driven mad by his failures and condemned to an asylum, which is ironically described as

“understaffed, overcrowded, terrible” (Le Guin 179). The novel’s conclusion reiterates the plea made to Haber and Orr by an extraterrestrial visitor during first contact: “Please cease destruction of self and others” (Le Guin 121-122).

Conclusion

In These Dystopian Times

Intro to the Outro

Utopian and dystopian studies scholars, ecocritics, authors, environmentalists, and historians have weighed in on whether or not speculative projections of negative futures can be a positive force for helping us prevent the worst and adapt to the inevitable consequences of the ongoing planetary climate emergency. As we creep closer to the second quarter of the twenty-first century, the question of dystopian fiction's continued relevance is very much an open one. Responses range from defences of dystopian thinking to complete disavowal of the genre, while questions understandably abound: What is the value of dystopian projections of the *future* when the *present*—characterized by global pandemic and mass death, military conflict and renewed threats of nuclear war, widespread environmental degradation, and the Sixth Extinction—is arguably as dystopian as anything Orwell could imagine? Is dystopian fiction, whose popularity has spilled over into the current fascination with dystopian TV and film, merely disaster porn or collective schadenfreude? What is the role of critics who study dystopian fiction within the privileged spaces of the academy? As ecocritic and environmental scholar Molly Wallace asks, “are we condemned merely to chronicling? Fiddling with literary texts while the planet burns—or, rather, as we participate in its burning?” (Wallace, “End” 568). These are questions that I have struggled with while writing this dissertation, as the pleasure and excitement with which I have read dystopian fiction has slowly waned, becoming replaced by anxiety and guilt about what it means to make a living by reading books about the “organisation of oppression and suffering” (McManus 1). Though I had planned to expunge these feelings by focusing my

conclusion on the genre's commodification and the irony of writing about undesirable fictional futures as the planet cooks, I want to end with what Jenny Offill calls an "obligatory note of hope" (Offill 67). I still believe that dystopia has something to offer. I will conclude this dissertation with some thoughts on the continued critical, cultural, and political relevance of dystopianism in these dystopian times.

As a genre that is self-consciously engaged in social criticism, the preoccupations of dystopian fiction have changed dramatically in the nearly 75 years since George Orwell's *Nineteen Eighty-Four* (1949). It is difficult to imagine, in 2023, that we are now further from the year in which Orwell set his nightmarish future than he himself was. Yet, arguably more unimaginable, amid renewed anxieties of nuclear war, is that scientists and journalists are unironically rushing to explain how developments in nuclear technology—this time fusion rather than fission—will enable industrialized nations to have clean and abundant futures while continuing business as usual. I think one useful thing about literary histories is that they can help us recognize in the present what has changed and, equally important, what has not. From *within* the climate emergency, Brent Ryan Bellamy writes, "we can now look backward and see the seeds of the current conjuncture and the trajectories that have led to the current climate volatility" (Bellamy 417). So, I have looked backwards and tried to show how dystopian fiction has been engaged with the most important environmental discourses since World War II, including anxieties about nuclear weapons and energy, chemical contamination and widespread ecological degradation, scarcity and ecological limits, and overpopulation and overconsumption. I have tried to show how dystopianism and environmentalism came of age together as dominant Western cultural heuristics and overlapping strategies for responding to socioecological effects related to the Great Acceleration. This required familiarizing myself with things I knew little

about, such as debates about nuclear technologies, chemical pesticides, and population dynamics, and more often than not, it also required reading against common critical interpretations of dystopian novels as ‘political’ rather than ‘environmental’ in nature. It also required thinking about how environmental discourses during this period adopted the rhetorical strategies of dystopianism with the utopian hope of preventing, to adapt David Wallace-Wells’ book title, an uninhabitable Earth. In recent decades, dystopia has thoroughly entered mainstream culture while warning with increasing frequency and urgency of the undesirable (environmental) future ahead. Yet, as Derek Maus has recently argued (2020), critical commentaries on dystopia’s current cultural cachet “have downplayed the extent to which dystopia flourished in earlier periods” (Maus 283). As a contribution to the field, it is my hope that this dissertation will be read as a pre-history to the twenty-first-century environmental turn in dystopian fiction, on one hand, while also as a potential starting point for other academics who sense that there are interesting, if under-theorized, links between the current obsession with dystopianism and the utterly pervasive sense of environmental catastrophe ahead.

There is a growing critical consensus that there has been a sea change in popular environmental thinking: anxieties about *future* environmental calamity have been replaced by the feeling that we are *now* “dwelling in environmental crisis” (F. Buell, *Apocalypse* 257). If dystopian fiction’s primary purpose is to serve as “cautionary pedagogy” by extrapolating present fears into future nightmares (Thaler 91), then the idea that the future we had hoped to avoid is already here raises serious questions about the value of dystopian fiction as a genre moving forward. The first part of this conclusion explores how the sense that we are now living in crisis shows up in environmental discourse and has impacted environmental thinking about the future. The second part considers why some literary critics and authors argue that we no longer

need dystopia in these dystopian times. In the third and final part, I conclude with a defence of dystopia by explaining that we need historical thinking now more than ever when it feels as though the future has collapsed into the present, and that we should remember that dystopia and utopia are not opposites, but instead are part of the same project of liberation (Booker, *Impulse* 15). I propose that the intersecting preoccupations of dystopia and cli-fi show that dystopian fiction will continue to be important, if in altered form, as we move further into a disrupted climate future where the boundaries between reality and fiction will become increasingly unclear.

Crisis Conceptualization: Thinking About Thinking About the End of the World

Several ecocritics, theorists, and activists argue that widespread anxieties about environmental crisis have migrated from the future to the present. In *From Apocalypse to Way of Life* (2003), Frederick Buell explains that since the 1990s “crisis thought has moved from describing an environmental apocalypse ahead to exploring crisis as a place in which people presently dwell” (F. Buell, *Apocalypse* 173, 163). While the possibility of nuclear confrontation, the negative effects of chemical pesticides contamination, and overpopulation were often located in the future, *and for this reason seemed preventable*, the idea that we are now “dwelling in environmental crisis” disrupts “linear conceptions of time and historical progression: ecological collapse is not merely on the horizon but is already happening; we are already living in the ‘end times’” (F. Buell, *Apocalypse* 257; Alberro 44). According to Ulrich Beck, this change in how we think about environmental crisis “in the hazardous age of creeping catastrophe” marks a significant shift in environmental thinking: “what generations before us discovered despite resistance, and had to shout out loud at the world, we have come to take for granted: the

impending ‘suicide of the species’” (Beck qtd. in F. Buell, *Apocalypse* 188). This poses a direct challenge to the viability of environmental speculation, both utopian and dystopian. As Lisa Garforth has recently (2019) remarked, “the collapse of crisis into the present” has produced the feeling that the ongoing climate emergency is a kind of “colonization of the future” (Garforth, “EF” 238). The loss of this “apocalyptic horizon” in environmental “crisis conceptualization” has meant that rather than weigh the possibility of future “apocalypse or utopia, economic expansion or a no-growth community, heedless progress or mindful stability, collapse or sustainability,” there is a politically enervating sense that “we are effectively living through what Brian Wynne calls the ‘predictive shadow’ of the first announcement of impending crisis” (Garforth, “EF” 239). This is certainly the feeling that one gets when reading some popular cli-fi that depicts how individuals and their families cope on a day-to-day basis with the mundane but nonetheless seriously challenging effects of global warming and ecological degradation, such as in Richard Powers’s *The Echo Maker* (2006), Barbara Kingsolver’s *Flight Behavior* (2012), Ben Lerner’s *10:04* (2014), and Jenny Offill’s *Weather* (2020).

Part of the challenge of thinking about how crisis has been conceptualized is that ‘the end times’ have crept up on us far more slowly than were anticipated in a postwar era dominated by anxieties about nuclear war. While the potential for instant mass death through nuclear war still looms in the background, Wallace explains that the slow unfolding of environmental catastrophe demonstrates that “the potential for sudden and total annihilation” associated with the Doomsday Clock “begins to look as though it may have been the wrong metaphor all along, for ‘by holding out for that noisy demise, we can pretend we haven’t been expiring by inches for decades’” (van Wyck qtd. in Wallace, *Risk* 17). An important caveat that Wallace offers these conversations is that though “we seem to find ourselves inhabiting rather than anticipating the end,” *the end* isn’t

really *the end* (Wallace, *Risk* 17). “The problem,” Wallace explains, is not so much “unthinkable nonexistence, the absolute end in a remainderless cataclysm,” but rather “survival in a world . . . that we can neither predict or control” (Wallace, *Risk* 18). These changing conceptualizations of crisis—the widespread feeling that the future might simply be a prolongation of the negative elements in the present, coupled with the sobering realization that human and non-human life will have to go on, paradoxically, living after the end—invariably impact how authors of dystopian fiction and environmental activists engage with the broader public with the hopes of preventing the worst possible climate scenarios. For many literary critics and environmental activists, the “nowness” of environmental crisis calls into question the efficacy of speculative thinking—dystopian or utopian—to mobilize political action in the present (Alberro 43).

The Now of Crisis and Modern Environmental Activism

A number of utopian and dystopian studies scholars have considered how this new type of “crisis conceptualization”—the “nowness” of environmental crisis—has influenced the recent discursive strategies of radical environmental activist groups (F. Buell, *Apocalypse* 163; Alberro 43). The growing scholarly interest in the overlaps between dystopianism and environmentalism is evident in the number of articles published in the field’s flagship journal *Utopian Studies* in the last few years. Mathias Thaler has recently (2022) argued that “the contemporary landscape looks rather different from the one in which modern environmentalism emerged,” since “we realize that today the prospect of environmental breakdown is not anymore projected into the near future but rather integrated into our quotidian lives” (Thaler 99). For Thaler, this “contemporary ‘immanentization’ of danger has widespread ramifications for how both the present and the future of our climate-changed world are imagined” (Thaler 99).

As several critics have recently argued, environmental activist groups have responded to the worsening climate emergency with a shift away from dystopian warnings to a focus on the present. This shift can be observed in the discursive strategies of newer radical environmental activist groups (REAs) like Extinction Rebellion (XR) and Fridays For the Future (FFF) and more established groups like Earth First! (EF) and Sea Shepherd (SS). Anna Friberg argues that XR and FFF eschew evoking the spectre of *future* disaster in favour of what she calls a “disruptive utopian method” (Friberg 1). Their method is ‘utopian’ in the sense that the rhetorical focus on ‘the now’ of the climate emergency hopes to ‘disrupt’ the present state of climate inertia by insisting that “the catastrophe that prior environmental groups warned against [has] . . . become real; the climate apocalypse is no longer a future threat but a present reality” (Friberg 2). Thus, distancing themselves from postwar environmental activism that “drew on a fear of a threatening future [to argue for] preservation and conservation, the new generation of climate activists argue that such practices come too late as the catastrophe is already upon us. In the words of Thunberg, the house is already on fire” (Friberg 2). Likewise, Heather Alberro has recently (2022) identified similar trends in REAs’ emphasis on the “nowness” of ecological catastrophe (Alberro 43), despite implicitly disagreeing with Friberg’s identification of these rhetorical shifts with “a new generation of climate activism” (Friberg 3) by drawing similar conclusions regarding more established organizations like EF and SS. EF and SS refuse to rely on either dystopian warnings or utopian dreams of the future to mobilize socioecological change, but this does not mean that they have abandoned hope: “they eschew not hope as such but hope in an abstract form, located in a distant futurity” (Alberro 50). Instead of placing their hopes in “distant futurity,” these groups have focused their activism on “prefiguring ‘the world we want now’” (Alberro 50, 44). All of these REAs seem to have internalized what Frederic Jameson

refers to in *Archaeologies of the Future* (2005) as “an anxiety about losing the future,” as the present itself appears so fraught with challenges that thinking about the future becomes ineffectual if not impossible (Jameson, *Archaeologies* 233). In this context, dystopia appears to have little value if we believe “that the future has disappeared as a field of action” (Friberg 7). These changes in how crisis has been conceptualized (or *when* it is conceptualized) call into question the value of dystopia’s cautionary and extrapolative method and its tendency to rely on the logic of the future anterior. For if the future is already here, and if the house is *already* on fire, then we are already ‘dwelling’ in that future moment in which *it will have been too late*.

Dystopia and the Disappearing Future

The future that environmentalists and authors of dystopian fiction have warned about since the early days of the postwar period is here. This is what F. Buell means when he declares that “we are heirs to the era of environmental apocalypse” and we are “no longer sheep who need a prophet to make [us] look up” (F. Buell, “History” 29). As this allusion to John Brunner’s *The Sheep Look Up* (1972) suggests, we are no longer in need of dystopian prophets to tell us that things *will be bad*. The future is here. It’s bad. While I agree with the general sense that we are living through the end (the end of what, I’m not entirely sure), I disagree with the feeling among some critics and authors that we no longer need dystopia in these dystopian times.

Two criticisms of dystopia recur in recent literary debates about how, if at all, dystopian fiction can help us think through the ongoing climate emergency. The first is directly related to what I have already outlined in this conclusion: in the context of the *ongoing* climate emergency, dystopianism is not just increasingly irrelevant, but it is irresponsible and dangerous. According to this line of reasoning, futurological depictions of a thoroughly disrupted environment elide the

negative effects of the climate emergency in the present; worse, placing the crisis in the future resembles if not denialism then an abdication of responsibility, which ultimately forecloses more appropriate forms of “social dreaming” (Thaler 99). For example, Rebecca Evans argues that it is irresponsible to treat “the climate apocalypse [as] some menacing and disjunctive future,” since “‘global weirding’ has already begun. It is for this reason that spectacularly inclined climate fictions . . . constitute a failure of imagination” (Evans 517). While these depictions *do* “impress upon the reader or viewer the scale and severity of climate change,” they fail insofar as they depict the emergency as a “temporally removed future event” (Evans 517). Allegedly, the ‘now’ of ecological crisis means that “it does not make sense anymore to draw on apocalyptic imaginaries to throw the current state of affairs into sharper relief” (Thaler 99). The second and related charge levelled against dystopia, which is somewhat more difficult to address because it is based on a frustrating misunderstanding of the genre, goes something like this: dystopianism is commodified and “trendy communal moping” (Maus 283-284). Far from encouraging an awareness of the need for action now, these bad fictional futures make us feel better in the present by offering “self-contained catharsis: we watch the world crumble, then return, sated, to reality” (Evans 517). Thankfully, Maus has pointed out that this overlooks the genre’s historical engagement with socioecological issues, “while also disregarding the intrinsic ‘critique of contemporary society expressed in the dystopia [that] implies (or asserts) the need for change’” (Fitting qtd. in Maus 284). This misunderstanding of dystopia, which I will discuss in detail shortly, has led Jameson, among others, to complain that “there has been an ‘overwhelming increase in all manner of conceivable dystopias, most of which look monotonously alike’” (Jameson qtd. in McManus 5).

Many of these concerns with dystopia and the need for alternative forms of thinking about the future are encapsulated in influential SF author and critic Kim Stanley Robinson's recent essay titled "Dystopias Now" in *Commune Magazine's* inaugural issue (Fall 2018) where he somewhat surprisingly disavows dystopianism.⁷³ While I do not agree with many of the conclusions he draws, his essay nonetheless shows a genuine effort to think through the role of dystopian fiction today. Robinson's view of dystopia is largely coloured by the sense that things are so bad now that we need literary genres that offer better alternatives: "The situation is bad, yes, okay, enough of that; we know that already. Dystopia has done its job, it's old news now, perhaps it's self-indulgence to stay stuck in that place any more" (Robinson, "Now"). Here, Robinson's more general criticism echoes what I have discussed so far: "the Anthropocene is a kind of biospheric dystopia coming into being every day" (Robinson "Now"). More pointedly than other critics, however, he implicates dystopian fiction and its readers for its/their complicity in the ongoing climate emergency, which is occurring "partly because of the daily activities of the bourgeois consumers of dystopian literature and film, so that there is a nightmarish recursive realism involved in the project: not just *Things are bad*, but also *We are responsible for making them bad*" (Robinson, "Now", emphasis original).⁷⁴ Far from encouraging a collective awareness of 'our' responsibility for the nightmarish present (the "dystopia now"), Robinson suggests that dystopias too often offer "a kind of late-capitalist, advanced-nation schadenfreude about those unfortunate fictional citizens whose lives have been trashed by our own political inaction" (Robinson, "Now"). For this reason, he questions dystopia's capacity to catalyze social change,

⁷³ Robinson, Kim Stanley. "Dystopias Now." *Commune*, 17 Nov. 2018, <https://communemag.com/dystopias-now/>.

⁷⁴ The essay's pointed and persistent use of 'we' and 'our' conveys a troubling sense that Robinson assumes readers of dystopian fiction, who would likely be readers of his own books, are all white, middle-class, home-owning, North American "bourgeois consumers," and not, for example, teenagers, broke college students, people of colour, sex/gender minorities, or people living anywhere outside of North America and Western Europe.

confiding that “these days I tend to think of dystopias as being fashionable, perhaps lazy, maybe even complacent, because one pleasure of reading them is cozying into the feeling that however bad our present moment is, it’s nowhere near as bad as the ones these poor characters are suffering through” (Robinson, “Now”). From this vantage point, dystopia appears to have very little to offer by way of revolutionary potential: partially because the present itself is so overwhelmingly dystopian, and partially because dystopia, at least in this reading, abdicates responsibility for this situation to citizens of the future.

More interesting is the article’s argument about how recent dystopian fiction has abandoned SF’s principle of “proleptic realism” in favour of “a metaphorical vision of our current moment” (Robinson, “Now”). As I will explain shortly, I believe that dystopia’s increasing overlap with cli-fi suggests the exact opposite: that dystopia has become *more invested in* “proleptic realism,” while cli-fi is almost indistinguishable from dystopian fiction on a planet that Robinson himself characterizes as “a kind of biospheric dystopia” (Robinson, “Now”). However, according to him, dystopias too frequently abandon the task of providing “a realistic portrayal of a future that might really happen,” and instead “[focus] on fear as a cultural dominant” (Robinson, “Now”). This sweeping criticism that recent dystopian fiction has abandoned “proleptic realism” in favour of fear-driven metaphor seems especially misguided, as he curiously uses *The Hunger Games* series as his *sole* literary example: “a realistic portrayal of a future that might really happen isn’t really part of the project[.] . . . What it does very well is to portray the feeling of the present for young people today, heightened by exaggeration to a kind of dream or nightmare. To the extent this is typical, dystopias can be thought of as a kind of surrealism” (Robinson, “Now”). If dystopia is only nightmarish surrealism that is untethered from the present (and thus the past), then I agree that there is little need for dystopian fiction.

Yet, an actual survey of recent dystopian fiction shows something altogether different. For every twenty-first-century surrealist vision of hell on earth (think Cormac McCarthy's 2004 novel *The Road*), there is a dystopian alternative that is clearly invested in depicting "a realistic portrayal of the future," to name only a few: Kazuo Ishiguro's *Never Let Me Go* (2005), Paolo Bacigalupi's *The Windup Girl* (2009) and *The Water Knife* (2015), Margaret Atwood's *The Year of the Flood* (2009) and *The Testaments* (2019), David Eggers' *The Circle* (2013), Emmi Itäranta's *Memory of Water* (2014), Nathaniel Rich's *Odds Against Tomorrow* (2015), Omar El Akkad's *American War* (2017), Jesse Ball's *The Diver's Game* (2019), John Lancaster's *The Wall* (2019), and Megan Giddings's *The Women Could Fly* (2022). That nearly all of these novels *explicitly* focus on (i.e., extrapolate) ecological degradation and its causes should tell us that they are committed to representing what is an incredibly *realistic* problem we must face in the climate emergency. This is one of the clearest ways that dystopian fiction, environmental thinking, and cli-fi tend to overlap, as Ruth Levitas has insightfully pointed out that

dystopias are not necessarily fictional in form; neither predictions of the nuclear winter nor fears of the consequences of the destruction of the rain forests, the holes in the ozone layer, the greenhouse effect and the potential melting of the polar ice caps are primarily the material of fiction, although they have given rise to some compelling literary representations. (Levitas 225-226).

If we accept the eco-theoretical argument that we are now "dwelling in environmental crisis" rather than living in anticipation of it (F. Buell, *Apocalypse* 257), then there is an argument to be made that any *realistic* depiction of the *present* state of the environment *must be dystopian*. This may change how we think about books that depict the climate emergency in more traditionally 'realistic' ways, such as Barbara Kingsolver's *Flight Behavior* (2012), Ben Lerner's *10:04*

(2014), Jenny Offill's *Weather* (2020), Lydia Millet's *A Children's Bible* (2020), or Charlotte McConaghy's *Migrations* (2020), as these books clearly borrow from dystopia through their use of extrapolation to convey their "cautionary pedagogy" (Thaler 91). I will unpack this more shortly. From this perspective, dystopia (and its history) seems more relevant than ever.

In These Dystopian Times

There is a certain degree of irony in declarations of dystopias' waning relevance in the context of conversations about the spectre of an uninhabitable Earth and "the loss of the future and futuricity" (Jameson, *Archaeologies* 233). Fortunately, amidst declarations that the future is gone, there are sober voices who have pointed out that life will still have to be lived *after* the end that isn't really the end (Wallace, *Risk* 18) and that the eco-geological epoch many call the Anthropocene is "also anticipatory, indicating humanity's probable impacts on geophysical and biological systems for millennia to come" (Trexler 1). While some of these impacts are already 'baked in,' as the coining of a new epoch suggests, it seems prudent to point out the very basic scientific fact that though we are "already living in the 'end times,'" things will get a whole lot worse without a coordinated global response to problems like global warming, ocean acidification, deforestation, and biodiversity loss (Alberro 44). The space between the terrible present and the potentially even more terrible future is the window in which dystopia can still hope to change things. In this context, it seems a missed opportunity, if not a bit ridiculous and elitist, to dismiss a genre that has such a hold on the public's imagination as 'bourgeois schadenfreude'. Instead, we might be better off asking why dystopia has captured the public's attention so thoroughly, not just recently but in the decades since World War II, and what it might have to offer moving forward.

Dystopia, History, Climate

Despite Robinson's suggestion that we seem to have transcended the need for dystopianism because "the situation is bad, yes, okay, enough of that; we know that already," there remains a great deal to be learned from recent history and the dystopian warnings that belong to it (Robinson, "Now"). I wholeheartedly agree that we must recognize the "utter uniqueness of the current crisis as it is unfolding today" (Bellamy 417), but this impulse must be balanced with an understanding that the problems we face are historical in nature. For all the changes that have occurred in the roughly 75 years since the publication of Orwell's *Nineteen Eighty-Four* (1949), there are some troubling similarities between Orwell's present and our own. First, the seemingly never-ending debates about which source of energy will *finally* power the global economy, reduce our reliance on fossil fuels, end hunger, etc., etc., etc., without having to change global distributions of wealth and patterns of consumption in overdeveloped nations. After researching and writing about the promise of nuclear technologies in the 1940s and 1950s, it is exhausting to hear podcasts and read news articles that wax poetic about how scientists have finally figured out how to use nuclear fusion to 'make' energy,⁷⁵ so now we only have to hammer out the minor details like building all the energy infrastructure, making it commercially viable, and distributing this technology quickly and equitably all over the planet. This is almost verbatim the message that I argued Orwell conveys in *Nineteen Eighty-Four*: we may have the

⁷⁵ To provide just one example, in a recently published article (December 2022) in *The Guardian*, Nicola Davis writes: "Researchers have reportedly made a breakthrough in the quest to unlock a 'near-limitless, safe, clean' source of energy: they have got more energy out of a nuclear fusion reaction than they put in" (Davis). It is almost unbelievable how similar the language here is to arguments from the 1950s, like when Chairman of the AEC Lewis Strauss claimed that "our children will enjoy in their homes electrical energy too cheap to meter . . . Transmutation of the elements, unlimited power, ability to investigate the working of living cells by tracer atoms, the secret of photosynthesis about to be uncovered, these and a host of other results, all in about fifteen short years" (Strauss 9).

tech (machines in his case), but politics remains the most difficult problem to solve.⁷⁶ Second, there are renewed population anxieties, which vary greatly depending on one's political leanings. While reasonable people (with whom I may agree or disagree) continue to debate if there are fundamental ecological limits to how many humans the Earth can sustain, and if we can or should engineer (*modernize*) our way beyond any such limits, there is a vile strand of politics emerging that blends population anxieties, environmental limits/scarcity, and nationalist and/or regionalist fascism: there are either too many of 'them' or not enough of 'us,' or there are too many of 'them' 'over there,' which really is an anxiety about 'them' coming 'over here' (John Lanchester's *The Wall* captures this quite well). Whether the conversation is about the Middle East, the Pacific Islands, Northern Africa/Southern Europe, or the border between Mexico and the United States, environmental displacement, migration, and refugeeism is an everyday fixture in geopolitical conversations with no apparent end in sight. Among others, Brunner and Ehrlich warned over fifty years ago that *socioecological* problems related to human population numbers cannot be meaningfully separated from excessive levels of consumption in overdeveloped countries, which is a point that has only become more true in recent years with reports that the "world's 2,153 billionaires have more wealth than the 4.6 billion people who make up 60 percent of the planet's population"⁷⁷ and that "investments of 125 billionaires have the same carbon footprint as France."⁷⁸

We can add to the above ways that history appears to be repeating itself the never entirely absent but certainly renewed anxieties about the threat of nuclear war between Russia and NATO members, and what is increasingly shaping up to be a new Cold War between the United States

⁷⁶ The idea that more energy and the products it enables will increase individual happiness and social progress is refuted rather forcefully in Vonnegut's *Player Piano* (1952) and Bradbury's *Fahrenheit 451* (1953).

⁷⁷ <https://www.oxfam.org/en/press-releases/worlds-billionaires-have-more-wealth-46-billion-people>

⁷⁸ <https://www.npr.org/2022/11/09/1135446721/billionaires-carbon-dioxide-emissions>

and China (which Canada has found itself embroiled in as allegations of election interference ramp up, while this ‘cold’ war threatens to turn hot as China lobs missiles into the waters surrounding American-allied Taiwan). We can also add to this list some new ideas from bad old (anthropocentric) ways of thinking that Carson and Le Guin especially warned about: geo-engineering the atmosphere (an idea criticized in the popular film and Netflix series *Snowpiercer* and in Elizabeth Kolbert’s most recent book *Under a White Sky*), mining the moon and, if worse comes to worst, leaving this mess behind altogether (ironically, not *all of us together*, but actually the extremely wealthy) and moving to Mars. The fact that, by and large, Western nations and the planet’s wealthiest corporations seem to be repeating the mistakes of the past (and inventing new ones along the same lines) does not mean that those who claim it might be useful to focus on the present (or even dream up utopias) are wrong. It does, however, suggest that it is premature to declare that dystopia’s time has come and gone because ‘we’ are all on the same page about what the problems are and how to fix them.

Another way of framing the difficulty of thinking about the current juncture historically, and of recognizing what dystopia has to offer, is that the present is really just the past’s future and the future’s past. This might sound obvious, but it bears stating *not despite* but *because* so much of our attention is now committed to how unprecedented the present really is. We must first acknowledge that global warming shows, as Andreas Malm puts it, that “the air is heavy with time,” and then figure out what this means for the future (Malm, *Storm* 5). The idea of climate reparations, for example, is one concrete example of how we must understand the interrelations between the past, present, and future of global warming: the actions of Western nations in the past (and present) means that some nations (almost always those on the oppressed and exploited side of colonial arrangements) *now* require support to help them deal with the

climate impacts they are experiencing today as well as what is coming in the future. Without this ability to think the current crisis historically, we might be left with the dangerous sense that whatever came before the present is no longer worth fussing over and all we can do is look forward. So, although “the climate apocalypse is no longer a future threat but a present reality” (Friberg 2), it is important to keep in mind Wallace’s injunction that “as the ‘becoming-real’ of risk offers a kind of ongoing revelation without foreseeable end, we need to be as aware of the past and present as we are oriented toward what might come” (Wallace, *Risk* 18).

By depicting the present as the past of the future, dystopian fiction requires readers to keep this historical perspective in mind. By foregrounding the “dialectical negotiation of the historical tension between what was, what is, and what is coming to be,” dystopian fiction can help us to “focus our own present” as a moment in history and to recognize that the present could always have been otherwise (Jameson, *Turn* 9; Moylan, *Scraps* 25). What this really means is that the future does not need to be like the present, only worse. Dystopian fiction, from this perspective, is clearly an example of a *hopeful* literary genre. I also think that it can prevent “environmental generational amnesia,” which reproduces the sense “that each generation seems to start from a baseline assumption of a more deteriorated environmental status quo as the new normal” (L. Buell, “Memory” 96). There isn’t anything normal about living amid a climate emergency, even though, for much of the planet’s most privileged population, global warming has so far only meant hotter summers and rainy ski seasons. By showing futures that border on uninhabitable in places that are less severely impacted by the realities of the climate emergency, such as Vancouver, New York, or London, dystopia’s “spatially or temporally distant settings . . . provide fresh perspectives on problematic social and political practices that might otherwise be taken for granted or considered natural and inevitable” (Booker, *Impulse* 19). In this way,

dystopia requires the privileged reader to draw connections between their present and the imagined future, which suggests that it is inaccurate to assume that speculative accounts of future crisis (whether utopian, dystopian, or apocalyptic) are somehow removed from the dreams and anxieties of the present (Booker, *Impulse* 19).

Dystopia & Utopia

There is little doubt that we need more utopian thinking in these dystopian times, yet this does not mean that we must disavow dystopia, for dystopia and utopia are not opposites as is sometimes mistakenly assumed. As Tom Moylan explains, “the dystopian genre has always worked along a contested continuum between utopian and anti-utopian positions” (Moylan, *Scraps* 188). Dystopias are critical, whereas anti-utopias are “anti-critical”: dystopias warn *if this continues things will get worse*; anti-utopias warn that *chasing utopia will make things worse than they currently are* (Moylan, *Scraps* 188). In this sense, while dystopia is often and mistakenly conflated with anti-utopia, dystopia is closer to utopia because “both reflect on the present in a critical manner, and from this point of view it is irrelevant whether they depict an attractive or an abominable alternative” (Czigányik 8-9).

Dystopianism has value as we move through the climate emergency because utopia and dystopia are not only *not opposites*, they are “very much part of the same project” that strives for a better future (Booker, *Impulse* 15). Alberro’s recent (2022) definition of hope applies equally to utopia and dystopia: “hope, a central aspect of utopianism, can be conceived as a future-oriented emotion or belief stemming from concrete dissatisfaction with the present (Lazarus 1999) and containing ethico-political exhortations that things ought to change” (Alberro 41). Dystopia would be incomprehensible without this hope that things could be better, since

“critiques of existing systems would be pointless unless a better system appeared conceivable” (Booker, *Impulse* 15). In this context, Robinson’s dismissive concession about dystopia’s value in the concluding sentences of his article—“if dystopia helps to scare us into working harder on that project, which maybe it does, then fine: dystopia. But always in service to the main project, which is utopia” (Robinson, “Now”)—displays a surprising lack of awareness about the critical conversations happening in the field that have, for some decades now, acknowledged that *dystopia has always been in service of utopia*.

If dystopia borrows from utopia the impulse that things should and could be better, dystopia offers utopia a critical diagnostic edge that identifies clearly and often compellingly which aspects must change in a given society. Dystopia “can energize the imagination and provide such fresh perspectives” and act “as a healthy opposing voice that helps prevent utopian thought from going stale” (Booker, *Impulse* 176). Booker argues that dystopian thinking should be used *with* rather than *against* utopian thought as a corrective to the kinds of “sterile, monological ideology” that can develop in the absence of critical voices: “in the final analysis, the most important contribution of dystopian thought may be to provide opposing voices that challenge utopian ideals, thus keeping those ideals fresh and viable and preventing them from degenerating into dogma” (Booker, *Impulse* 177). Uncoincidentally, Booker’s argument regarding dystopia’s continued cultural importance and dialectical relationship with utopia in the “Postscript” to *The Dystopian Impulse in Modern Literature* (1994) anticipates Jameson’s influential argument that utopia is not (or should not be) a blueprint, but instead is “discursive strategy” and form of “disruption” (Jameson, *Archaeologies* 231-232). This give and take between dystopia and utopia is most clear in the emergence of the critical utopia and critical dystopia. The critical utopia contains the seeds of dystopian critique by critiquing the idea of

utopia itself by acknowledging its own inherent limits. Jameson's widely accepted theorization of utopia's critical turn includes dystopia's clear diagnostic and critical qualities: "Utopia now begins to include all those bitter disputes around alternative diagnoses of social miseries and the solutions proposed to overcome them; and the formal center of gravity then begins to shift precisely to the question of those differences" (Jameson, *Archaeologies* 216). In fact, arguably the two most important texts in the critical utopian turn—Le Guin's *The Dispossessed* (1974) and Marge Piercy's *Woman on the Edge of Time* (1976)—both contain dystopian worlds that are juxtaposed with the utopian (yet still imperfect) alternatives. What this suggests is that dystopia is the absent referent of utopia's alternative.

We need dystopia *and* utopia moving forward. To suggest otherwise is to mistakenly cut off what has been a fruitful allyship between the genres. Speculative fiction has been able to maintain a critical edge towards Western culture throughout the postwar period through the waxing and waning of utopia and dystopia: dystopia's clear emergence in the 1940s, its ceding centre-stage to the critical utopia in the 1970s, and its return to popularity from the 1980s onward that coincided with the development of the critical dystopia, which signaled a shift in the dystopian genre towards a more open engagement with utopia (Seyferth 10).⁷⁹ The relationship between dystopia and utopia will continue to be imperative when thinking about the future in a time when the omnipresence of crisis threatens the very idea of the future.

⁷⁹ Whereas the traditional dystopia gestures "by negative example . . . in the direction of utopia: whatever else you do, don't do this," the critical dystopia "maintain[s] the utopian impulse within the work" (Canavan, "Preface" XI; Baccolini 520, emphasis original). Examples of this genre are (somewhat ironically given his disavowal of dystopia) Robinson's *The Gold Coast* (1988), Margaret Atwood's *The Handmaid's Tale* (1985), Marge Piercy's *He, She and It* (1991), and Octavia Butler's *Parable of the Sower* (1993).

Dystopia and Cli-Fi

The third and final reason why I believe that we should not dismiss dystopianism's continued relevance today is its increasing overlap with cli-fi. Dystopian fiction and cli-fi are both genres that attempt to think through the "nowness" of environmental catastrophe (Alberro 43). Within the historical framework of this dissertation, which has traced the coming together of dystopianism and environmentalism in the early postwar years, I would like to tentatively propose that we think about the overlap in the form and content of these genres as a high-water mark in the relationship between dystopianism and environmentalism. Contrary to Robinson's criticism that dystopia has abandoned SF's "proleptic realism" (Robinson, "Now"), dystopian fiction and cli-fi *both* offer realistic representations of a disrupted climate as extrapolative literary genres whose revolutionary potential lies in their "cautionary pedagogy" (Thaler 91). Rather than ask if dystopia has anything to offer environmental thinking moving forward, we might look more closely at how dystopian anxieties about the future seem to have merged with widespread anxieties about the 'nowness' of environmental collapse, which has deeply influenced the emergence of cli-fi. This is clear in several texts where the boundary between dystopia and cli-fi is nearly impossible to identify.

If it is true that we are currently living amidst "a slow crisis already in process, not an event to come" (F. Buell, *Apocalypse* 173), then it seems inevitable that realistic depictions of the *present* and dystopian speculations on a disputed climate *future* will be harder to distinguish by the day. How genres interact is changing within "the global-weirding of the contemporary climate" (Hern and Johal 5), as "literary novels bleed into science fiction; suspense novels have surprising elements of realism; realist depictions of everyday life involuntarily become biting satire" (Trexler 14). The penetration of the global climate emergency into all aspects of the

human experience raises important questions about the extent to which *all* realistic fiction must now be considered cli-fi and whether or not *all* cli-fi—because we live in this constant state of emergency—is necessarily dystopian, if not necessarily science fictional. These are questions that Trexler has hinted at by suggesting that “the Anthropocene has arrived, and all contemporary fiction could be said to reflect a condemned ‘greenhouse culture’” (Trexler 27).

Stephanie LeMenager’s concept of ‘genre trouble’ is one way that we can think about the recent emergence of cli-fi and its close relationship to dystopia. Genre trouble is a useful way to think about how, in the age of anthropogenic global warming, “genres are fraying, recombining, or otherwise moving outside of our expectations of what they ought to be because life itself is moving outside of our expectations for what it ought to be” (LeMenager 476). The unpredictability of the global climate is changing “affective expectations we hold for how things unfold, in art and life,” which more and more “do not make sense”; and so, for many literary critics, the question is now “how life itself begins to encourage new representational regimes” (LeMenager 476). One such new representational regime is cli-fi, a term coined in the early 2010s by Dan Bloom, whose emergence shows that “the climate crisis has been steadily pulling genre fiction into its orbit” (Bellamy 417). Axel Goodbody and Adelaide Johns-Putra’s explanation of cli-fi’s core themes in *Cli-Fi: a Companion* (2019) shows how the genre’s environmental anxieties blend what are undeniably dystopian elements with more traditionally realistic novelistic concerns. Though not always, cli-fi often depicts “imaginings of the future impact of climate change [that] typically involve desertification, drought and water shortage, floods and violent storms, the spread of tropical diseases, climate refugeeism and the collapse of a society divided between rich and poor into lawlessness and armed conflict” (Goodbody and Johns-Putra 5). Importantly, these anxieties are expressed alongside realistic portrayals of

“human dramas of hope and love, betrayal and despair[,] [which] play out in action-driven plots peopled by journalists and scientists, politicians and climate activists, and ordinary people struggling to live in the worsening circumstances” (Goodbody and Johns-Putra 5). In this description, cli-fi balances speculation with realism in its extrapolation of current anxieties into very near future crises that cohere so close to the current reality that they can hardly even be called speculative, though in a literal sense they must be, such as the imminent collapse of Monarch butterfly populations in Kingsolver’s *Flight Behaviour* (2012) or the more widespread species extinction event in McConaghy’s *Migrations* (2020); or the onset of catastrophic storms in Lerner’s *10:04* (2014) or Millet’s *A Children’s Bible* (2020). Cli-fi’s reliance on extrapolation speaks to the importance if not the inevitability of thinking about the future in a world where the traditional stuff of novels—realistic narratives of personal hardships, growth, social conflicts, and community—will continue to occur, but in the context of a disrupted environment. Cli-fi’s ability to balance the everyday-ness of environmental crisis in which we all now dwell—of course, often in profoundly unjust and unequal ways—with the crises that will inevitably come has led LeMenager to suggest that it offers a “complex realism for the Anthropocene” (Ramuglia and LeMenager 155).

Like cli-fi, dystopian fiction does not necessarily need to be outlandish, futuristic, or even altogether unfamiliar from the present, especially given that environmental crisis has come to appear “less apocalyptic and more realistic” (F. Buell, *Apocalypse* 257). F. Buell presciently anticipated this turn in the genre in 2003 when he explained that because ecological crisis was becoming increasingly part of peoples’ everyday experiences, “ecodystopianism” would show “not just nightmares the future will bring more fully out,” but “problems people . . . cope with daily” (F. Buell, *Apocalypse* 257). This contradicts, as I mentioned above, Robinson’s suggestion

that dystopia has abandoned “proleptic realism” (Robinson, “Now”), as many popular and critically acclaimed dystopian novels *do* depict highly realistic futures. In this context, I believe that Patricia McManus is right when she argues in *Critical Theory and Dystopia* (2022) that dystopia can only be effective if the imagined future portrayed is “legible, as a possibility germinating in the present, and which therefore takes on the guise if not of a warning then of a rebuke of some kind to the reader’s present” (McManus 1). As the climate situation worsens, the space between readers’ everyday experiences and the futures depicted in dystopian fiction inevitably shrinks. A clear example of this is how novels that depict intense weather events, such as Rich’s *Odds Against Tomorrow* (2015), only appear to readers to be speculative until *actual* superstorms become normalized into everyday (or at least every year) occurrences. The close relationship between reality and dystopian extrapolations *heightens* dystopia’s capacity to affect the reader, McManus argues, because “it is not the terrible which most pointedly estranges but its familiarity, its translation in the future world into the ordinary and everyday” (McManus 12). It is this legibility, or the link between the now and the future, that enables what I consider to be dystopia’s primary function: “cautionary pedagogy,” which is the ability “to send warning signals about dangers that remain concealed from public purview” (Thaler 91, 92). From this perspective, texts such as McCarthy’s *The Road* (2004) or *The Hunger Games* series do not appear to be dystopian at all *because they are not legible*, that is, “recognizable as an extension of lived experiences here and now” (Thaler 91).⁸⁰ In contrast, proper dystopias serve as “reliable guides to a future that could await [their readers] rather sooner than later. Realism, of some kind,

⁸⁰ It is not my intention to dismiss these novels because they are metaphorical rather than ‘proleptic’. By suggesting they are not dystopian I am not arguing that they are any less relevant to climate conversations. These novels have clear utility. I believe it was George Monbiot who argued that *The Road* is the most important book ever written about climate change. They capture and convey important emotions and ideas that can affect how people think about real socioecological issues, such as how *The Road* expertly expresses how a parent or an older person might feel bequeathing to their children or the next generation a world that is dramatically impacted by global warming.

hence constitutes a formal feature of all dystopias that highlight which pathways need to be avoided as we move forward” (Thaler 96). Interestingly, this is *exactly* what Goodbody and Johns-Putra claim that cli-fi often does in its representations not only of climate change, but of many of the concerns I have looked at in this dissertation: “unsustainable levels of consumption and population growth, concerns over the role of science in society, genetically modified foods, genetic engineering and geoengineering, and more generally what is perceived as the slide into ever more individualistic, virtual and ‘unnatural’ forms of life” (Goodbody and Johns-Putra 5).

The anxieties that dystopian fiction and cli-fi address amid the ongoing climate emergency are often similar if not the same. Dystopia is a genre whose hold on the public’s imagination is undeniable and its methods and anxieties are proliferating and mixing with other genres. This makes me think that we are stuck with dystopia in these dystopian times: to write, read, and assess literature when all fictional representations of the present are englobed by climate concerns and haunted by spectres of dystopian futures. What I know for certain is that it is misguided to think that dystopia is reducible to disaster porn or collective schadenfreude, or that it has turned its back on “proleptic realism” in favour of thoroughly commodified surrealism (Robinson, “Now”). Instead, I propose it is more interesting to think about how dystopia, alongside other genres, appears to be branching out and changing, and to remember that “to work with genre is to work with form-in-history, form moving historically” (McManus 10).

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