

Restoration's Return in the Age of Climate Crisis:
Toward a Feminist Environmental Justice Response

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I have kept Donna Haraway's discussion in *How Like a Leaf* (2000) on the relationship Martin Heidegger found between gratitude (*thancian*, "to thank,") and thought (*thencan*, "to think") close to my heart while writing this dissertation. In his publication entitled *What is Called Thinking?* (1954), Heidegger asks, "How can we give thanks to this endowment, the gift of being able to think what is most thought-provoking, more fittingly than by giving thought to the most thought-provoking? The supreme thanks...would be thinking. And the profoundest thanklessness, thoughtlessness" (Haraway & Goodeve, 22).

Like Haraway and Heidegger, I agree that thinking "has to do with... a kind of remembering that is 'in memory of' those from whom one develops ones thinking" (Haraway & Goodeve, 22). In light of this acknowledgement, my dissertation is written especially "in memory of" my faithful readers, Susan Craddock, Dan Philippon, and David Pellow, each of whom inspired and supported me before this project, throughout this project, and beyond; my advisor, Jacquelyn Zita, who, over a decade-long relationship, between farm fields and classrooms and coffee shops, emboldened my belief in the importance of a unified feminism and environmentalism; and my defense chair, Naomi Scheman, who has perhaps given me the most to think/thank about in this project by encouraging creative, compassionate, and commonable connection-making.

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I think in memory of all of you.

Dedication

For Finlay, the Fight, and the Future.

Abstract

This project is situated at the locus of discourses on feminism, environmental justice, climate change, and ecological restoration. Asking *what kinds of responses to climate change are needed on this rapidly-changing planet, and which initiatives will address social and ecological dilemmas simultaneously*, I turn to ecological restoration as a troubled but promising field to harness the insights of feminist environmental justice toward intervening in both the causes and consequences of climate change. In order to engender resiliency among human and nonhuman communities, I advocate a contextualized, grassroots response to climate change that I have coined *justice-oriented restoration*. This ideology and method strengthens voices and movements often marginalized by engaging diverse stakeholders in order to create ecologies responsive to climatically-induced biosocial shifts, as well as the declining field of restoration itself, which climate change threatens to render irrelevant. In so doing, this project contributes to debates on sustainability; to the cross-pollination of the humanities, social sciences, and sciences; and to the momentum building worldwide for community-driven, site-specific adaptations, mitigations, and remediations to environmental vulnerabilities.

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Chapter One

On Plants, Politics, and Publics

Introduction

Plants are political. On some level, this statement has always seemed self-evident to me. Before graduate school, when I ventured away from Minnesota to live in Seattle volunteering for a year as an ecological restorationist, I was aware of political contestations over the environment. “Environmentalism” had been a common political identity and affiliation, one to which I ascribed at least since popular 1990’s “Save the Rainforest!” and “Reduce! Reuse! Recycle!” catchphrases permeated my middle school consciousness. The U.S. government had a well-established regulatory arm in the Environmental Protection Agency (EPA), and Earth Day—April 22nd—had been a nationally recognized holiday since 1970. Legislation existed to protect certain species, often endangered, and to regulate others considered destructive or invasive.

What I had not yet considered before digging trails in the Cascades or wrestling with carpets of invasive English ivy in Seattle’s forests for ten hours a day was that politics are not expressed only in highly visible and explicitly contested arenas; they are also seen and felt in more subtle and mundane arenas. The plants in neighborhood play lots, lawns, and gardens have a politics; the plants inhabiting our National Parks forests have a politics; the plants confined within botanical gardens and research labs have a politics; plants farmed and then sold at markets have a politics; and plants from far away places flourishing despite a city’s best efforts to eradicate them have a politics. They are

political because land use, ownership, and partitioning have been contested throughout history; because plants have been caught up in conflict whilst accompanying people in transcontinental migrations and conquests; because they have been resources for spirituality, food, livelihoods, medicine, tools, shelter, energy, scientific research, and even entire national economies. More succinctly, they are political because their presence and placement reflect individual and cultural values about how humans and nonhumans should relate.

Yet much contemporary wisdom about nonhuman nature, inherited from distinctly Euro-American interpretations of wilderness, actively works against the pairing of “plants” (indeed, of *all* nonhuman nature) with “politics.” According to renowned historian of U.S. environmentalism, Roderick Nash, while two competing nature ideologies have dominated since European colonization—one wherein nature is cast as evil, in need of taming, another wherein nature is sublime refuge from the “spoils” of urbanity—both distinguish nature apart from culture and humankind.¹ These onto-epistemologies inform the preservationist ideals that found conventional U.S. environmentalism: whether to ensure its sanctity apart from the humans who would tarnish it or safely enclose its unruliness away from the people it supposedly stands to threaten, nonhuman nature has long been circumscribed within city, state, and national parks. This has everything to do with how nonhuman nature became “environment” rather than “home”; “here”; “us”; “me.”

Back when I embarked on that transformative, challenging, and uplifting year of restoration service, I was motivated by the idea that I was living up to my identity as an

¹ The history of these ideologies is detailed in Nash’s *Wilderness and the American Mind* (1967).

environmentalist, doing my part, both physically as well as symbolically, to respond to places damaged by human neglect and ignorance. It was fulfilling to me to labor on behalf of my nonhuman counterparts; like many restorationists, I sought to make up for the harm that I and other humans have caused in our ignorance, neglect, and hubris. My crew and I were a testament to the fact that people were *not* inherently destructive or opposed to nature; humans could co-create healthy green spaces, and participate beneficially in the wellbeing of nature—a “nature” I now conceived as cultural as well.

What compels me these days as I continue my volunteer work restoring the Mississippi River Gorge in Minneapolis and St. Paul is that I labor on behalf of my home, giving thanks to the nonhuman and material actors that have nurtured and sustained these communities. This exchange of gifts roots me even deeper into my home, perhaps because I consider my home to be an extension of myself, and caring for it is therefore simultaneously self-serving and selfless. Restoration here feels symbolic and spiritually fulfilling, but there also exists a feeling of pragmatic mutualism: when I love something, I take responsibility for it by stewarding it. These ecologies not only deserve, but require, that people value and understand their complexities, and work to keep them free from harm and exploitation.

Despite the beneficial qualities of restoration that continue to compel me a decade after being introduced to the practice, questions that began to develop in Seattle still linger, questions that continue to move my personal environmentalism beyond a preservationist mindset: *Which versions of “environment” guide this restoration plan? How and why did this site win restorative attention versus another one? And which*

non/humans are envisioned as stakeholders on this land and why? The nature of these questions indicates that plants have, in these past ten years, become pointedly political to me. Today I share environmental scholar Reid Helford's view when he writes, "The work of ecological restoration should be more than just the interpretation of nature's needs; it must be the discernment of the needs of nature's publics as well" (140).

I may have never come to this conclusion without feminist environmentalisms and environmental justice, both of which were introduced to me during my Master's education. Though rooted in different histories and politics, both impart wisdom that "nature" includes "nature's publics." In other words, they work against decades of preservationist ideology that relegates nonhuman nature both ideologically and physically to enclosures separated from humankind. Since gaining major momentum in the mid-1980's, environmental justice (EJ) politicizes nature-culture distinctions by calling attention to the deliberate ways in which marginalized human populations are unduly affected by environmental contamination, degradation, or lack of access to clean natural resources.² For EJ advocates, "the environment" is conceptualized along a broad, integrated vision of nature and culture,³ or as environmental scholar Giovanna Di Chiro writes, as *home*: the place you live, work, and play (300-301).⁴

² In *From the Ground Up* (2000), editors Luke Cole and Sheila Foster describe environmental justice as such: "Environmental hazards are inequitably distributed in the United States, with poor people and people of color bearing a greater share of pollution than richer people and white people. [...] Fueling this recognition is a remarkable rise in grassroots activism communities across the country. Thousands are... fighting for their children, their communities, their quality of life, their health—and for 'environmental justice'" (10).

³ Or put another way, according to the First National People of Color Environmental Leadership Summit's "Principles of Environmental Justice" (1991): environmental justice affirms the "ecological unity and the interdependence of all species."

⁴ As Di Chiro points out, EJ is further differentiated from mainstream environmentalisms given its gendered, racial, and class compositions: whereas "environmentalist" typically signals white and middle-

Always already justice-oriented in its aims, feminist environmentalists have elaborated a number of connections between hetero/sexism and speciesism or environmental destruction, including neo/colonialism, militarism, racism, classism, and ableism in their analyses as well (Sturgeon, 23-24). As ecofeminist philosopher Karen Warren explains, nature is a feminist issue, not because gender is the most important axis of power, but because gender can be used as an effective lens through which to understand marginalizations between women, “other human Others,” and [nonhuman] nature (1-2). Like EJ, then, feminist environmentalisms are highly intersectional—not merely additive—as ecofeminist Greta Gaard explains: “Instead of being a ‘single issue’ movement, ecofeminism rests on the notion that the liberation of all oppressed groups must be addressed simultaneously” (5).

These two forms of environmental consciousness share commonalities with movements for indigenous sovereignty, anti-corporate exploitation, and natural resource protection across the globe. Both have expanded in recent years to include “climate justice”⁵—a movement to recognize and resist the causes and effects of climate change, which impact impoverished communities, sea-level nations, and the economically vulnerable first and foremost—and “food justice”⁶—a movement to recognize and resist

class constituents and male leaders, EJ has been a predominantly working class, women of color movement (300).

⁵As Brian Tokar, author of *Toward Climate Justice* (2010) explains, “The fact that global warming is caused by human activity does not mean that we are all equally to blame. The greenhouse gas emissions from the industrialized ‘North’ have been disproportionate... [...] Paradoxically, however, the intensification of the climate crisis is likely to have the most devastating effects on people in the impoverished and underdeveloped ‘South’. [...] Therefore, the climate crisis...challenges our sense of social justice” (8).

⁶ Recounted in Robert Gottlieb and Anapama Joshi’s *Food Justice* (2013), “‘rising evidence of injustice within the food system’” includes “‘the maldistribution of food, poor access to a good diet, inequities in the labour process and unfair returns for key suppliers along the food chain’” (6). Food justice is therefore won

the local-global foodways that prevent certain communities from accessing, growing, transporting, or selling safe, healthy, culturally-appropriate foods. In these ways, feminist environmentalisms and environmental justice productively complicate and politicize U.S. environmentalisms, often mobilizing consciousness in more contextualized, intimate, and effective ways.

The growing popularity of feminist environmentalism and environmental justice, expressed through an outpouring of scholarly, activist, legislative, and community-building initiatives in the past few decades, has signaled that clear alternatives to conventional environmentalisms are here to stay. One shining indication of this assertion came in 2009, when fifty thousand people from around the world—including myself—gathered for the ground breaking two week Klimaforum People’s Summit, a climate justice alternative convention to the 15th annual United Nations Conference of Parties on Climate Change (COP15) in Copenhagen. The event featured major activists such as Maldives President Mohamed Nasheed, Bolivian President Evo Morales, author Naomi Klein, author and 350.org founder Bill McKibben, Nobel Laureate and Green Belt Movement founder Wangari Maathai, and author and Navdanya founder Vandana Shiva. Yet it also provided a forum for *any* world citizen to identify themselves, their lands, nations, epistemologies, or peoples as stakeholders ignored and abandoned by the UN decision-making process. The Klimaforum became a locus for NGO tabling, networking, activist meet-ups, banner-making, protest convening, meals, art displays, and nightly film, comedy, and musical performances. Every day, panels and speakers lectured on

when “the benefits and risks of where, what, and how food is grown and produced, transported and distributed, accessed and eaten are shared fairly” (6).

such topics as cross-continental coalition building, indigenous sovereignty, environmental justice, Third World debt cancellation, women's leadership development, spiritual and religious perspectives on climate change, climate refugeeism and asylum, organic gardening and farming methods, and the latest updates on climate science. It also became the drafting place of the 2009 People's Climate Declaration, "System Change, Not Climate Change," a document signed by nearly 500 global organizations and presented at the COP15 on December 18, 2009.

I was fortunate to share a scholarly paper entitled "Feminist Environmentalists Rewrite the Global Warming Narrative" at the Klimaforum, which elaborated upon the ways in which feminist, justice-oriented environmentalisms present more effective and salient alternatives to conventional climate change discourse.⁷ What I had not yet anticipated until attending the Klimaforum and seeing how environmental justice principles were powerfully expressed in each of the three hundred debates, presentations, and protests, was that environmental justice could, and *should*, be applied to every form of contemporary environmentalism. In an era where human activities have so altered Earth's ecosystems as to warrant the geologic, chronological designation "Anthropocene," and thus, humankind is so self-evidently immersed with nonhuman nature, it only makes sense to enact all environmentalisms in consideration for the ways in which the planet is co-shaped by nonhumans, material forces, *and* people. Indeed, perhaps my beloved practice of restoration could benefit, and in turn, more effectively benefit others, by incorporating justice aims as well.

⁷ Parts of that paper appear in the following chapter.

This project is a joining together of three fields I have found profoundly motivating for my environmentalism: feminism, environmental justice, and ecological restoration. Though they have different histories, aims, and constituents, each field has a stake in how environmental ills, like climate change, are interpreted and confronted. For example, climate change threatens to render the practice of restoration obsolete (a phenomenon explained in Chapter Three), so restorationists have been debating how to adapt the field and its purpose in the context of climate change. Using the guidance of feminist environmental thought, this project contributes to those debates by offering a timely suggestion: if reconceived to address social justice concerns in addition to the traditionally ecological, nonhuman interests restoration has always sought to address, perhaps environmental justice could be attained *while* providing restoration a direction forward in our climate changed future. A justice-oriented restoration could serve nature as well as “nature’s publics,” effecting positive socio-ecological change.

Project Introduction

General Topic & Relevance

Climate change predominates environment-based discourse in the Anthropocene, for never before in history has humanity’s impact been so globally reaching. Many environmental dilemmas existed before our climate began shifting planetary processes, and each requires attention. But climate change has so pervaded daily life in most of the world—including major economies, agrisystems, and ecologies—that the preponderance of preexisting environmental problems have been exacerbated by it.

Feminist environmental scholar Sherilyn MacGregor critiques the near-exclusionary focus by major environmental organizations on climate change as *the* environmental crisis, as well as its consequence, the repackaging of long-standing environmental lobby groups and environmental troubles to fit “the climate agenda” (623). Especially when white male leaders dominate the climate politics arena, MacGregor worries that many “interests, views, and voices are very much neglected” (623). For example, “women have spearheaded campaigns on pesticide use, industrial pollution, nuclear radiation, multiple chemical sensitivity, biodiversity, animal welfare and seed-saving,” few of which, she argues, get much attention from climate change policy-makers (623). Moreover, climate change can be used to “trump” other legitimate concerns, as when nuclear energy, GMOs, or biofuels emerge on conservative agendas as supposedly harmless initiatives to contend with climate-related energy concerns and crop failures or shortages (624-624).

While not every socio-environmental problem can be circumscribed by climate change, climate change deserves attention adequate enough to contend with it, for it impacts or exacerbates so many other biosocial problems as well. But in line with MacGregor’s reasoning, my project also *intervenes* in mainstream environmental politics by arguing for the necessity of feminist environmental justice perspectives when many discourses, truths, and solutions are drowned out by hegemonic actors: powerful UN ambassadors, nations, politicians, and corporations.⁸ By contrast, I attempt to strengthen voices and movements often marginalized by suggesting that contextualized, grassroots

⁸ I agree with MacGregor’s analysis that these actors typically promote a “depoliticized climate consensus,” which “erase[s] social difference...cast[s] nature as an external threat to be endured...and replace[s] democratic public debate with expert administration and individual behavior change” (618).

approaches have the potential to offer socially just and ecologically sound solutions to environmental problems.

One particular contextualized, grassroots response to climate change advocated in this project is what I have coined *justice-oriented restoration*. Asking, what kinds of responses to climate change are needed on this fast-changing planet, and which initiatives will address social and ecological dilemmas simultaneously, I turn to ecological restoration as a troubled, but promising, field to harness the insights of feminist environmental justice toward intervening in both the causes and consequences of climate change, engendering resiliency among humans as much as nonhumans. Against traditional definitions of restoration, I advocate justice-oriented restoration because it can respond to several pressing climatically induced changes at once. Among these changes include the increasing need to respond to shifting habitat zones in light of temperature and condition transformations. Human needs in the face of climate-related events, such as natural disasters, shifting foodways, and new environmental policies could also be confronted by justice-oriented restoration. Additionally, justice-oriented restoration could address the decline of restoration as it is currently understood, for traditional conceptions of the field rely upon historical definitions of species appropriateness that are becoming increasingly irrelevant in light of climatic shifts. Finally, justice-oriented restoration could continue conventional restoration's tradition of repairing damaged relationships between humans and the nonhuman world, but with the added benefit of repairing humans' damaged relationships with each other. These are the kinds of topics

this project explores, which seeks to contribute to cutting edge scholarship on climate change while enhancing feminist environmental justice goals.

Scholarship Review

This project draws upon three main interdisciplinary fields: feminist environmental theory, environmental justice case studies and theory, and ecological restoration theory. Feminist environmentalists, like geographer Joni Seager (2009) and literary scholar Stacy Alaimo (2009), have demonstrated the gendered constructions of climate discourse and policy, and by extension, their gendered impacts. For example, Stacy Alaimo argues that masculinist climate change science accounts for the EPA website's "distant, cold, neutral[]" language, which conveys depoliticized apathy toward the plight of those most vulnerable to climate change [impoverished women and children (31)] on the one hand, and an "unspoken aspiration" to "understand, assess, and predict" climate change, rather than to remedy it, on the other ("Insurgent," 26-27).

Sociologist Ariel Salleh (2009), physicist Vandana Shiva (2008), sociologist Ana Isla (2009), and philosopher Chris Cuomo (2011), focus primarily on how women and other minorities bear the brunt of androcentric climate-related policies and regulations. Shiva, for example, details how nuclear energy, popularized in the climate change context as a "clean" alternative to carbon-intensive energy production like coal or natural gas, has specifically sexed/gendered consequences for women downwind or downstream of uranium tailings (*Soil*, 24-27). This radioactive material continues to cause menstrual problems, miscarriages, fertility issues, stillbirths, and fetal/infant deformities in females

near the Jaduguda mine in India, and Navajo reservation spanning parts of Utah, Arizona, and New Mexico (26). For these communities, Shiva argues, “‘Clean’ cannot be measured only in terms of CO₂ emissions. It has to include all ecological risks from cradle to grave. Climate change does not make nuclear energy safe” (27).

Others, like environmental scholar Noël Sturgeon (2009) take a more intersectional approach: using a “global feminist environmental justice analysis,” she explores popular environmental tropes in advertising, film, and television to better elucidate the “connections between social inequalities and environmental problems to uncover the systems of power that continue to generate the complex problems we face” (6). One popular trope utilized by environmentalists to raise awareness of climate change’s deadly consequences has been Arctic animals, such as polar bears or penguins, which are often considered without reference to the Arctic human communities that will also suffer. She argues, “What kind of environmental politics can encompass both the threat to emperor penguins and Alaskan Natives from global warming? The disjuncture between the politics of species preservation and the politics of environmental justice presents a barrier to thinking through the relation between these looming disasters” (140).

Nancy Tuana (2008) and Alaimo (2008) are material feminists who describe the environment—and by extension, our climate—as a sphere wherein the material-discursive, human-nonhuman, natural-cultural interact. The natural world is always-already political for these scholars. For example, Tuana uses Hurricane Katrina to illustrate how this terrible natural disaster was caused as much by anthropogenic forces as by nonhuman, material forces, making it both a “natural” and “cultural” phenomenon.

Moreover, Katrina's destruction unmasked a variety of interacting socio-material injustices, due to nonhuman agency of winds, hurricanes, flooding, and river sedimentation combined with human agency enacted in activities like river channelization, levee building, local plastics manufacturing, and racist housing politics. Only in accounting for all of the naturalcultural agents involved can an accurate understanding of Katrina exist, as well as an effective proactive plan to prevent future natural disasters.

Feminist environmental scholarship founds my critiques of contemporary climate change politics in Chapter Two. In Chapter Three, it motivates my analyses of conventional U.S. environmental ideology, which in certain contexts, both emerges from and contributes to processes of racism, heterosexism, and/or sexism. Feminist environmental work also underpins my methodology throughout this entire project, as I analyze environmental politics from a biosocial perspective, and evaluate environmental policies, histories, and ideologies from the critical lenses of historically marginalized classes of people.

The field and activism of environmental justice provides a second domain of literature that informs my project. Contemporary environmental justice scholarship has demonstrated that within the context of climate change, the inequitable distribution of environmental hazards is not only intensified and broadened, but also connective of otherwise distinct injustices. For example, Africana studies scholar Filomina Chioma Steady (2009) details the cascading effect of climate change for residents of the Sub-Saharan region of Africa, which many estimate will be hardest hit by climate change,

despite the fact that its people produce less than four percent of the world's greenhouse gases (53). As warmer temperature zones expand, agriculture—the main source of income and exports in the region—will be threatened by frequent droughts. These expanding zones, increasing by both latitude and altitude, will enlarge the habitat range and breeding season for parasitic insects and the likelihood of diseases, such as malaria. Already the single greatest killer of children, malaria imposes a “\$12 billion annual drain on African economies through death, medical costs, and lost productivity” (53). Severe crop failures and losses of income will further destabilize the ability for Sub-Saharan Africans to withstand deadly disease (53).

Environmental justice author and activist Larry Lohmann (2006) critiques the technocratic approaches to climate mitigation that can both exacerbate and create new global inequities and environmental destruction. Writing on behalf of the Durban Group for Climate Justice,⁹ he argues against offsets, a major branch of the contemporary fossil fuel economy ushered in by the Kyoto Protocol. Offsets license and excuse the extraction of fossil fuels or the pollution associated with burning them by funding what are meant to be environmentally beneficial projects elsewhere in the world. As Lohmann chronicles, offset projects in Guatemala, Ecuador, Uganda, Costa Rica, India, Sri Lanka, Thailand, South Africa, and Brazil have had disastrous effects. In Guatemala, for example, U.S.-based power producer Applied Energy Service, Inc. purchased an

⁹ According to their website, The Durban Group for Climate Justice “is an international network of independent organisations, individuals and people's movements who reject the approach to climate change promoted by polluting corporations, financiers, northern governments and economists. Since 2004 we have provided a platform for discussion and analysis of climate justice, and our members engage in regular advocacy in favour of real, not false, solutions to the crisis. We view durable change as emanating primarily from grassroots and shop floor movements for climate justice. We aim to help mobilise communities around the world and pledge solidarity with people resisting carbon trading across the world” (<http://www.durbanclimatejustice.org>).

agroforestry offset in the Western Highlands (222). Forty thousand farmers were educated in sustainable forestry and planted fifty million pine and eucalyptus trees. But the plan failed; the privatization of the forest meant that indigenous subsistence farmers were forced out of the Western Highlands and refused reentry, depriving them of daily necessities (223). Furthermore, the tree species planted were inappropriate for the climate and ecology, creating an unsustainable economy (224). All told, the ten-year project fell far short of the one million tons of carbon it was supposed to have offset, while devastating local ecologies and indigenous sovereignty (224).

Other environmental justice scholars, like Shiva (2011), agroecologist Eric Holt-Giménez, and journalist Raj Patel (2009), chronicle the ways food injustice is exacerbated by climate change, and climate injustice is exacerbated by certain food ways. Poor harvests, caused by climatic events, differentially impact every producer, transporter, or consumer along the path from seed to table, affecting impoverished communities and nations foremost. According to Oxfam, “An average of 500 weather-related disasters are now taking place each year, compared with 120 in the 1980s; the number of floods has increased six-fold over the same period” (Holt-Giménez & Patel, 14). Further, pollutive and/or energy-intensive methods of food production, harvesting, transportation, and consumption likewise contribute to climate change-causing carbon, nitrogen, and methane emissions.¹⁰ This is why so many climate and food justice

¹⁰ Carbon emissions primarily result from burning fossil fuels; nitrogen is emitted from chemical fertilizer use; and methane gas is emitted primarily from factory farms (although rising methane emissions are also a pressing concern as Arctic permafrost thaws due to warming temperatures).

activists—including some U.N. researchers¹¹—have advocated for small scale farming, food cooperatives, and community gardening efforts as contextualized and efficient modes of confronting hunger, poor nutrition, food inaccessibility, greenhouse gases, and the devastating ecological impacts of resource-intensive/high input monocultures and livestock production. According to climate and food justice scholars, small, biodiverse, ecological farms have the potential not only to help us mitigate and adapt to climate change, but to remediate it as well: “small farmers usually amend their soils with organic materials that absorb and sequester carbon better than soils that are farmed with conventional fertilizers” (125).¹² By Shiva’s estimates, organic farming increases carbon absorption by up to fifty-five percent and water holding capacity by ten percent (“Climate,” 370).

Environmental justice scholarship informs my project on several occasions. I utilize it to present critiques of, as well as alternatives to, conventional climate change politics in Chapter Two. And by attuning restoration thinking toward the causes and constituents infrequently considered, environmental justice scholarship directs my research to move restoration past preservationist environmentalisms, and toward a definition of restoration responsive to ecological *and* social needs in Chapter Three.

¹¹ See (1) the U.N.’s “Trade and Environment Review 2013: Wake Up Before it is Too Late,” which included contributions from more than 60 experts around the world advocating a planetary shift toward more sustainable agriculture. The report concludes, “This implies a rapid and significant shift from conventional, monoculture-based and high-external-input-dependent industrial production toward mosaics of sustainable, regenerative production systems that also considerably improve the productivity of small-scale farmers” (United Nations, *Trade and Environment Review*); and (2) The U.N. General Assembly’s “Report of the Special Rapporteur on the Right to Food” (2014), where researcher Olivier De Schutter critiques large-scale industrial agricultural projects, like the Green Revolution, and instead promotes small-scale food production as the most efficient, ecological, and socially-just method of feeding the world.

¹² According to Holt-Giménez & Patel, “Around four tons of carbon per hectare is stored in organically managed soils. ...[T]he conversion of 10,000 small- to medium-sized farms to organic production would store carbon in the soil equivalent to taking 1,174,400 cars off the road” (125-126).

Finally, I support the environmental justice consensus on promoting the benefits of small-scale, sustainable food production by showcasing a case study of the Beacon Food Forest in Chapter Four.

The final field of scholarship informing my project is ecological restoration theory. The writings of founding restorationist William Jordan III are used in Chapter Three to define the field, summarize its history, and evaluate its tenuous position as an environmentalism that both adheres to *and* challenges conventional U.S. environmental thought. Chapter Three productively exploits this contradiction, optimizing some degree of resolution that ultimately challenges the field toward progressive definitions.

Chapters Three and Four also utilize the research of ecological restoration scholars—like Mrill Ingram (2009), Thomas Simpson (2009), Peter Dunwiddie et. al. (2009), James Harris et. al. (2006), Stuart Allison (2012), Matthais Gross (2010), and Richard Hobbs, Eric Higgs, and Carol Hall (2013)—who have been working intently in the past few years on understanding restoration’s role in a climate-changed future, when invasive species proliferation, temperature changes, and seasonal shifts will make it increasingly difficult, if not altogether counterproductive, for humans to restore the plants and systems that predated climate change. Until climate change threatened to transform entire ecologies, what any restorationist sought to restore was limited to which ecological processes, plants, insects, and animals came before a destructive presence. With the loss of historical targets for restoration, many, like Mrill Ingram, worry that “At worst, climate change might render the practice obsolete, or relegate it to being an expensive hobby” (235).

Others, like Dunwiddie et. al., maintain that restoration’s relevance will hinge upon a site’s underlying ecological resiliency. They argue that organisms respond in three main ways to climatic change: they may *persist* in otherwise unsuitable habitat; they may *adapt* through behavioral or genotypic changes; or they may *disperse* to a new site by migration or altering their range (321). In each of these scenarios, restorationists would be able to continue contributing to ecosystem health by continuing current history-based work *or* providing new spaces for migrating habitats and their flora and fauna (Gross, 84). But if a site’s resiliency is threatened, organism extirpation or extinction is likely, rendering the restorationist’s role irrelevant.

Harris et. al. argue that future-looking restoration endeavors will span a continuum of *responsive* efforts—designed to conserve and protect existing ecological assemblages as the field has always done—and *proactive* efforts—designed to intervene (via mitigation and reversal) in climate change by sequestering carbon and influencing local climatic conditions (174). As Chapter Four explores further, Stuart Allison acknowledges that proactive restoration-as-mitigation is “a significant departure from our traditional way of doing ecological restoration” (104), but may nevertheless be required of the field as novel ecosystems become the norm. In a debate that will continue to play out as climate change ramps up, restorationists continue to waiver between modeling damaged land according to historical precedence versus abandoning precedence in favor of simply maintaining ecosystem services (107).¹³ My project challenges restorationists

¹³ “Ecosystem services” are typically defined as any positive benefit that nonhuman nature provides for people, although in the case of restoration, nonhuman nature can also “service” itself, that is, other nonhumans. Services are often divided into four types: (1) “supporting” ecosystem services, which comprise the fundamental functions of any healthy ecosystem, including photosynthesis, soil formation,

to evaluate sites for their contextualized needs, and with the engagement of local human stakeholders, capitalize on the opportunities climate change presents to facilitate new natures that build socio-ecological resilience.

Despite this noteworthy scholarship on how contemporary socio-environmental issues will affect future life for humans and nonhumans who vary in degrees of vulnerability, feminist environmental theory, environmental justice, and restoration theory and practice could yet stand to benefit from each other's insights. For all of the critical analyses brought forth by feminist environmentalists and environmental justice advocates, pragmatic deployments are needed to enact them. And for the pragmatic, on the ground responsiveness of restoration, there are yet ideological contradictions that prevent it from achieving trustworthy social benefits, a problem that feminist environmental justice could remedy. Furthermore, restoration needs to reconcile its contradictions in order to have a say in climate-changed natures *and* ensure its own viability. In failing to recognize these issues, valuable scholarship can be left unapplied, rendered irrelevant, or abandoned as ineffective. Meanwhile, those most vulnerable to environmental ills cannot afford idleness when it comes to the quality, or the very *possibility*, of their lives.

My project will remedy this theory-praxis gap by examining how restoration

water cycling, and nutrient cycling; (2) “provisioning” services, which comprise resources we can extract and utilize, including fuel, water, plant fibers, or plant medicines; (3) “regulating” services, which moderate our ecosystems, and include climate regulation, flood and erosion regulation, disease regulation, pollination, and water purification; and (4) such non-material “cultural” services as aesthetic, spiritual, educational, or recreational benefits. This list was compiled in partial reference to The National Wildlife Federation’s website (2014).

As distinguished from “historical precedence”—or as I will describe in Chapter Three, “historical range of variability”—maintaining “ecosystem services” simply implies promoting or enabling a functioning ecosystem, even if relationships, processes, flora and/or fauna do not reflect a site’s precedence.

could embody one salient response to climate change if reconsidered in light of feminist environmental justice principles. In so doing, a pathway for restoration's future viability could be carved, while contributing to more socially just, ecologically viable, *resilient* communities. Through a self-designed methodology based upon feminist environmental justice theory, I demonstrate that a *justice-oriented restoration* is needed, possible, and effective. I expect this research to contribute to debates on sustainability; to the cross-pollination of the humanities, social sciences, and sciences; and to the momentum building worldwide for community-driven, site-specific adaptations, mitigations, and remediations to environmental vulnerabilities.

Methodology

The method that guides my research is an analytic for evaluating the effectiveness of various approaches to environmental dilemmas. It is predominantly shaped by environmental justice and feminist theory, especially science studies, environmental/ecofeminist theory, and material feminist theory. There are two fundamental reasons for selecting these fields to guide my analyses: First, I agree that any effective approach to solving environmental dilemmas must first appreciate that “environment” is a social, political arena of power. The feminist environmental justice theory I employ to analyze environmental issues engages with an *interactionist* ontology, which, according to Tuana,

removes any hard-and-fast divides between nature and culture, while at the same time troubling the division between realism and social constructivism. As I have argued elsewhere: “The world is neither ‘fabricated’ in the sense of created out of human cultural practices, nor is its existence independent of human interactions of

a multitude of forms, including cultural.” Interactionism posits a “world of complex phenomena in dynamic relationality.” (191)

If this perspective is taken seriously, then the causes of our environmental dilemmas must be understood as multifaceted, meaning that the solution will have to be multifaceted as well, addressing a number of problems, and engaging a number of stakeholders simultaneously. There has been no more obvious occasion in history than today’s predicament of global climate change to recognize that nature and culture, human and nonhuman, material and discursive cannot be parsed, and that doing so not only fails to effectively solve major dilemmas, but creates more in its wake.

Meanwhile, my use of an interactionist analytic productively challenges conventional feminisms, environmentalisms, and ecological restoration. As a whole, feminist theory needs the interactionism elucidated by feminist environmentalisms, science studies, and material feminisms, in order to extend its insight and influence in matters of the body, environment, science, and medicine.¹⁴ Environmental theory needs interactionism in order to extend its relevancy to human communities who have too long

¹⁴ Conventional feminisms stand to benefit from interactionism, for up until the early 1980s, the nature-culture dualism was perpetuated by feminist theorists wary of the historical association of women and racial minorities with nature. The wild and unruly space of wilderness and animalia served as a metaphor for racial and gendered minorities’ supposedly natural eroticism, irrationality, and uncontrollability [for further explanation, see Carolyn Merchant’s “Dominion Over Nature” (2001) and Evelyn Fox Keller’s “Secrets of God, Nature, and Life” (2001)]. Yet the “feminist flight from nature,” as Stacy Alaimo coins it in *Undomesticated Ground* (2000), came with the consequence of a lack of feminist engagement in important questions surrounding medicine, science, and environment (Haraway, *Simians*, 184-185). Beginning in the 1980s, feminist science studies, and later, feminist posthumanisms, postcolonialisms, and material feminisms, have sought to correct this avoidance. A variety of helpful concepts have been put forth to transgress nature culture dualisms: Tuana’s “viscous porosity” and “interactionism” (2008); Karen Barad’s “intra-actionism” (2007) and “posthumanist performativity” (2008); Haraway’s “naturecultures” (2008), “material-semiotic” (1997), cyborg (1991), and “companion species” (2007); and Alaimo’s “transcorporeality” (2008). These concepts not only assist contemporary feminisms in moving beyond what was once perceived as a limit, but also sketch out helpful ways of moving feminism forward toward a future where effective politics are no longer single-issue based, nor simply intersectional (for often, “intersectional” represents theory relevant only to human lives), but *interactionist*.

been abandoned by preservationist ideology. And ecological restoration needs interactionism in order to live up to its purported distinctiveness within U.S. environmentalism, extend its benefits beyond only parklands, and carve a future for itself as a discipline resilient to climate change.¹⁵ *All three* fields need interactionism in order to maintain their own relevancy in the face of climate change, and contribute their insights toward mitigating, adapting to, and even remediating mounting environmental crises.

What this first analytic strategy implies is that the research I gather be attuned to the following kinds of questions: Is this scholarship relevant to a diverse set of human and nonhuman stakeholders? Does it mine the gaps of inherited knowledges to suture nature-culture, human-nonhuman, and material-discursive binaries? And are the solutions to dilemmas proposed pragmatic in their attention to several constituents at once?

Second, I find feminist theory and environmental justice to be effective environmental analyses because they develop their insights “from below,” from grassroots, responsive, and/or marginalized levels of power. Knowledges developed from perspectives in politically stratified societies are structured, as feminist epistemologist Sandra Harding contends, by those with the most power and privilege, who can “organize and set limits” upon *who* performs *which* societal activities, and *how*

¹⁵ Ecological restoration has traditionally posed a challenge to conventional environmentalisms, which have historically advocated a “hands-off” approach to nature, coded as exclusively nonhuman. By contrast, restoration demonstrates that people can be a beneficial influence on the land, rather than inherently destructive, *while* co-creating nature. Yet still, as Chapter Three explores in more detail, restoration has had trouble fully embodying that ethos, and I argue that it has prevented its effectiveness. Environmental justice and feminist environmentalisms push restoration toward a full realization of its naturalcultural ethos.

we understand them (54). Therefore, those at the bottom of social hierarchies frequently have insight into how power operates to benefit some while disadvantaging others, *as well as* how to navigate and survive marginalization. According to Chicano studies scholar Chela Sandoval, those not destroyed by their lack of power can “develop modes of perceiving, making sense of, and acting upon reality that are the basis for effective forms of oppositional consciousness” (35). As philosopher Michel Foucault historicizes, these are “subjugated knowledges,” “a whole series of knowledges that have been disqualified as nonconceptual knowledges, as insufficiently elaborated knowledges; naïve knowledges, hierarchically inferior knowledges that are below the required level of erudition or scientificity” (7). Throughout history, oppositional knowledges have been marginalized, ignored, and defeated, because they threaten social hierarchies. Agnotologists—those who study culturally induced ignorance—trace the ways in which certain knowledges have been purposefully suppressed for this reason, a phenomenon they name “epistemologies of ignorance.” As agnotologists argue, “Ignorance is often not merely the absence of knowledge but an outcome of cultural and political struggle” (Schiebinger, 237). Feminist philosopher Naomi Scheman explains this in relation to environmental in/justice:

The environmental justice movement exists to address the fact that vulnerability to the negative effects of pollution, toxins, global warming, and other environmental dangers are inequitably distributed, that—in ways that track the inequities of race, class, gender, sexuality, and abilities—some are relatively invulnerable to what others are imperiled by. As epistemologists of ignorance have argued, this invulnerability carries an epistemic cost. It is much easier for manufacturers of doubt about, for example, global warming, to bamboozle those who are shielded from its effects, who may not notice when the vegetables in their supermarket start to come from different places, a not-noticing not available to

those whose subsistence crops are no longer viable or whose water table has dropped inaccessibly low. (Scheman, “Empowering,” 15)

The threatening nature of oppositional knowledges, which are intentionally ignored or defeated, is precisely why critical scholars and activists in feminism and environmental justice find them valuable: one can better understand how power operates by looking toward its extremities, “at the point where it becomes capillary,” as Foucault writes (28). So in order to alter the ways knowledge is produced *and* produce knowledges that are relevant and accurate within subjugated experience, attention should be focused on those made vulnerable to what geographer Ruth Gilmore has called “the fatal couplings of power and difference” (22). In so doing, “we will develop richer analyses of how it is that radical activism might most productively exploit crisis for liberatory ends” (22). Science studies scholar Donna Haraway reminds us in “Situated Knowledges” (1991) that subjugated accounts of reality are neither innocent nor all-encompassing: “*how* to see from below is a problem” (191). Instead, they are still “preferred” because “They are savvy to modes of denial through repression, forgetting, and disappearing acts—ways of being nowhere while claiming to see comprehensively. [...] [T]hey seem to promise more adequate, sustained, objective, transforming accounts of the world” (191).

Historically, various feminist and environmental justice movements have been founded upon the witnessing, consciousness-raising, and retelling of injustices. There is good reason why personal stories dominated 1960s-70s feminist medical literature, for example, and why case studies dominate environmental justice literature: there were, and

still are, few(er) accounts of reality that validate their stories. From these stories, rich epistemologies have emerged. In essence, then, this project begins its inquiries by seeking out the testimonies and theories of those who cannot afford to “not-notice,” in Scheman’s words, because I believe their ideas are most trustworthy, likely to be insightful, relevant to real-life conditions and consequences, and deserving of attention in political arenas that drown them out.

What this second analytic strategy implies is that my research also be attuned to the following questions: Does my object of study work against epistemologies of ignorance and/or provide a counter balance to environmental hegemonies in U.S./global leadership, policies, discourses, etc.? Does it strengthen marginalized voices? Will it help socio-ecological communities to be more resilient? Will it contribute to social-ecological pragmatism, justice, and sustainability?

Chapter Introduction

From the perspective of feminist environmental justice, my inquiry into justice-oriented restoration is organized into the following three chapters. Chapter Two, “Ecological Livability in the Age of Climate Crisis,” asks which kinds of contemporary environmental politics most effectively engender what I have coined “ecological livability.” The concept impels consideration about *which* conditions make life livable at all scales in an ecological community. Primarily concerned with how power relations distribute environmental vulnerabilities inequitably, ecological livability is both a method—*which politics will engage or represent the diverse non/human residents of this*

ecology?—and a goal—*which politics will increase this community’s resiliency in the face of climate change?*

Using ecological livability as a measure of democracy and ecological health, I analyze major recent climate policies. This study reveals three overarching limitations that have failed to remedy the causes and effects of climate change, and consequently fail to promote ecological livability. Using UN REDD+ as an example, I conclude that this kind of forest restoration initiative can be parsed into aspects that either prevent or enable ecological livability. In so doing, I clarify the conditions necessary for enacting the *justice-oriented* restoration described in the following chapters.

Chapter Three, “Restoration’s Return: Toward a Justice-Oriented Ecological Restoration,” investigates the benefits and drawbacks of conventional ecological restoration—itself a marginalized form of modern U.S. environmentalism—in an era of climate change. It builds upon the previous chapter by suggesting that ecology *and* justice can be attained even in extant, every day environmental practices, such as restoration. Using material feminist theory to tease apart restoration’s ideological inconsistencies, I posit that the field has potential to contribute to environmental justice, *while* addressing concerns about nonhuman life as it traditionally aims to do. This endeavor is possible only if restorationists can truly distinguish their work from preservationism, but climate change already threatens to do that. In harnessing climate change as an opportunity, I maintain that if restorationists conceive of their work as *justice-oriented*, they can both secure a future for themselves in an age of novel natures,

and increase communities' resilience to socio-environmental ills brought on by climate change.

Entitled "Novel Natures and Nature's Publics," Chapter Four combines the ideas from previous chapters by offering a radical illustration of what a justice-oriented restoration project aimed at engendering ecological livability in the age of climate crises could embody. Compiled with research from dozens of articles and three personal interviews, it begins with a summary of the development of Seattle, Washington's grassroots Beacon Food Forest, a seven-acre project designed by the neighborhood to plant and grow an edible urban forest free to the public for foraging. Growing their own food and rehabilitating the local ecosystem are goals second only to the primary goal of engendering an empowered, educated community in this ethnically diverse neighborhood. Beacon Food Foresters recognize the food insecurity that plagues their community as one of the many manifestations of climate change; localizing their food supply, offering it for free, and planting both culturally diverse nonnative plants alongside native plants, is Beacon Hill's solution to increasing their resiliency in a climate changed future.

I then debate the extent to which the Beacon Food Forest can plausibly "count" as ecological restoration at all, given the great extent to which it creatively departs from conventional definitions of restoration. Employing cutting-edge scholarship from forward-thinking ecological restorationists, I argue that such unconventional projects should indeed encompass the future of restoration after all. Next, I evaluate the collectivist, market-alternative, participatory features of the BFF that enable it to

facilitate ecological livability in an era of burgeoning novel ecosystems. In conclusion, FBFF's positions on mutualism and responsiveness are showcased for the ways they highlight the feminist environmental justice principles that inform justice-oriented restoration.

Chapter Two

Ecological Livability in the Age of Climate Crisis

The Radical Reframing of Ecological Livability

This chapter emerges from my desire to frame global climate change as a problem of *ecological livability*. In an age of unprecedented, climatically induced change, uncertainty, and extremes, I ask, which kinds of natures will be livable, and for whom? I begin by suggesting that a radical reframing of environmental politics is necessary to ensure Anthropocene political initiatives address not only ecological vulnerabilities, but the social vulnerabilities that cause or emerge from them. Then I provide an overview of contemporary climate change politics, which are evaluated with the critical lens of feminist environmental justice. Finally, I utilize those critiques to explore The UN REDD+ Programme, in order to gesture toward the kinds of considerations that will be necessary for practicing the *justice-oriented restoration* discussed in the following chapters.

“Ecological livability” is a concept I extend from queer theorist Judith Butler’s “livability,” a term most poignantly captured for its relation to “precariousness.” In Butler’s ontology, we live in a thoroughly interdependent world, as evidenced by life’s fundamental, inescapable condition of vulnerability (*Undoing*, 24). We are each held in thrall to the decisions of myriad actors: in a very urgent way, our bodies are “given over” to the care (and carelessness) of others, meaning that our bodies are “always something more than, and other than, ourselves” (25). To cite one of her examples, African bodies

“given over” to cellular colonization by HIV are vulnerable not only to a weakened immune system but to U.S. media portrayals of AIDS in Africa, which fail to capture the depth and extent of human loss in ways that might incite political movement toward livable conditions for them (ibid). In another example, Butler discusses the inability of U.S. legal and medical institutions to conceive of personhood in ways that lie outside the normative sex-gender system (58), as evidenced by coercive surgery, psychiatry, and social norms to “correct” intersexed individuals (57-74). Instances such as these illustrate how relationships human and nonhuman, local and global, personal and institutional, contour our existence, and even determine how *livable* our lives will be. As Butler argues, some lives are made to exist more precariously than others due to their geopolitical and social locations: “there are radically different ways in which...vulnerability is distributed throughout the globe” (24). This greatly impacts the nature of our epistemologies—who is made knowable (27), our affective economies—who is recognizable (*Frames*, 4-5) and grievable (4-6, *Undoing*, 19), and by extension, our politics—who our nation-states protect and enable.

In recognition of this, Butler argues that we are ethically obliged to ask what conditions delimit each life as precarious. Such an inquiry will reveal how norms support and maintain life chances and opportunities differentially. Heteronormativity in the U.S., for example, upholds the values, traditions, and institutions typically benefiting monogamous, adult, heterosexual, married couples of the same race. Not only have these norms privileged those who fit these parameters while excluding those who do not, they also shape the lives and agendas of those who fit many, though not all, of those

parameters. For example, critics of homonormativity point out that many gay and lesbian couples or organizations who seek the social and material benefits of our heteronormative society by advocating to expand those norms, exclude those who will never be sheltered by them.¹⁶ According to Butler, our task, therefore, is not merely to expand norms so that more lives can be contained within their bounds; it is rather to pursue “[w]hat might be done...to shift the very terms of recognizability in order to produce more radically democratic results” (*Frames*, 2).

It is in Butler’s spirit of “radical democracy” that I employ “livability” as an ecological concept. And yet, the conjoining of “ecological” with “livable” also impels Butler’s notion of precariousness by underscoring that bodies are also “given over” to nonhuman actors, and that human-nonhuman inter- and intra-relations construct our existence on a material—as well as social or discursive—level.¹⁷ Material feminist Stacy Alaimo makes this connection in her essay “Insurgent Vulnerability and the Carbon Footprint of Gender” (2010). In it, she continues to develop her notion of “transcorporeality,” the “recognition of the substantial interconnections between human corporeality and the more-than-human world,” by theorizing vulnerability as “a sense of precarious, corporeal openness to the material world” (23). This conception of

¹⁶ See, for example, Agathangelou et. al. “Intimate Investments: Homonormativity, Global Lockdown, and the Seductions of Empire” (2008).

¹⁷ There has been much discussion over the so-called humanist limits of Butler’s writing. While Butler has demonstrated a deep understanding of the material consequences of social norms and regulations, she has been critiqued for ignoring the ways that nonhumans and materiality are themselves agentic, focusing instead on the power of discourse to shape materiality. Butler does acknowledge the limits of humanism (see, for example, *Undoing Gender*, 13, 12, 35). However, Alaimo and Hekman point to the frequency of criticisms waged against Butler’s “loss of the material” (specifically the materiality of the body) through her dependency on discourse in *Gender Trouble* and *Bodies That Matter* (3). In their collection, *Material Feminisms*, critiques and reworkings of Butler’s writings and interviews can be found in Colebrook, 68, 80; Hekman, 90, 104-6; Kirby, 221, and Alaimo, “Trans-Corporeal,” 246-7. Further critiques in this vein can be found in Barad’s *Meeting the Universe Halfway*, 61-64.

vulnerability insists upon “shifting the terms of recognizability” because it requires that we move beyond the limits of even of the most inclusive, expanded humanist norm, by considering the spectrum of non/human life, or life lived at all scales.

Ecological livability thus directs us to appreciate both the historical power differences as well as the geological, planetary differences that result in human and nonhuman ecological vulnerabilities, and even injustice. For example, as feminist environmental philosopher Chris Cuomo writes, “Climate change was manufactured in a crucible of inequality, for it is a product of the industrial and fossil-fuel eras, historical forces powered by exploitation, colonialism, and nearly limitless instrumental use of ‘nature’,” which today endangers us all, “including those who have contributed little or nothing at all to the industrial greenhouse effect” (693). At the same time, ecological livability reminds us to consider vulnerabilities initiated primarily as a matter of geographic location (693): Arctic inhabitants (both human and nonhuman) are negatively impacted by climate change as are metropolitan Australian inhabitants. Of course, these populations are likely made differentially vulnerable to climate change due to their political power and ability to adapt, but appreciating environments as powerful actors, as we would other “cultural” or “discursive” axes of power, productively complicates how vulnerability is distributed across the globe.

While ecological livability draws inspiration from the material and discursive intra-connectedness of life, it also avoids the trap of victimization often associated with exclusive appeals to vulnerability, especially in environmentalist contexts, where as feminist geographer Rachel Slocum observes in media and activist portrayals of polar

bears, “There are those who pity and others who have become only victims: the two are separate” (428). Not only can appeals to vulnerability focus on the limitations of those harmed as opposed to the injustices that fostered harmful conditions, they also, as Cuomo argues, tend to “obfuscate the agency, knowledge, and resilience of members of disempowered or marginalized groups” (695). Yet because “livability” is not only about revealing the structural and material precariousness of life, but also which policies, lifestyles, and choices can make life *more* livable—even “thrivable”—ecological livability utilizes the knowledges and experiences of disempowered groups to demonstrate how privilege, power, and geography can shape perspectives of vulnerability—risk, danger, “trade-offs,” etc.—induced by climate change, its causes, and responses. Alternatives to discourses of victimization are emerging, as Cuomo observes,

from indigenous, anti-globalization, feminist, and youth movements for climate justice. These movements point out that many communities are in vulnerable positions precisely because they uphold ecological values that have not been engulfed by global capitalism and technological modernization, recognizing marginal status in fossil-fuel cultures to be a sign of wisdom and resilience rather than weakness. (695)

Alaimo, too, argues that women—a population unduly affected by climate change—are powerful agents of change. In this spirit, “Feminist organizations such as Women’s Environment and Development Organization (WEDO) are careful to complement feminine vulnerability with feminist agency, savvy, and survival strategies, calling for more parity in decision making and leadership” (“Insurgent,” 312). And as many indigenous and material feminist scholars remind us, for all of the ways in which nonhuman creatures are held in thrall to human lifestyles and policies, the nonhuman world is yet agentic and unpredictable, providing ways in which humans can learn *from*,

not just *about*, nonhuman creatures and spaces. In the upcoming pages, I demonstrate how ecological livability can be used to evaluate major contemporary U.S. and international climate change politics, thus facilitating ecologically livable responses to climate change.

Between *The End of Nature* and *Eaarth*: Where are we now?

In 1989, environmental studies professor and climate justice activist Bill McKibben was among the first public figures to predict the “end of nature” as we knew it, and the ushering in of a qualitatively novel, anthropogenically-altered environment: “There’s no such thing as nature anymore—that other world that isn’t business and art and breakfast is now not another world, and there is nothing except us alone” (*End*, 76). McKibben recently coined this new place we inhabit “Eaarth” (2010). He writes, “earth has changed in profound ways, ways that have already taken us out of the sweet spot where humans so long thrived. [...] The world hasn’t ended, but the world as we know it has—even if we don’t quite know it yet. [...] [This different planet] needs a new name. Eaarth” (*Eaarth*, 2). Of course, this new name does not signal the advent of an entirely novel existence; nature changes and adapts to a variety of evolutionary and cultural impacts. Yet McKibben’s point is that climate change has, and will continue, to so profoundly alter life as we have known it, that we would do well to acknowledge the unprecedented shift. Indeed, climate change is ushering in natures with which no human has ever confronted, let alone coexisted. There is something “new”—and terribly unsettling—to these natures after all.

These two publications of McKibben's, which serve as important touchstones in sustainability studies, temporally bookend major reformist popular, federal, and international efforts to contend with climate change. Noteworthy among these efforts, in chronological order, are: (1) the Clean Air Act Amendments of 1990, which increased the regulatory powers of the federal government to address climate matters such as air pollution-induced acid rain and ozone depletion; (2) the formation of the United Nations Framework Convention on Climate Change (UNFCCC) in Rio de Janeiro, Brazil (1992), whose negotiations laid the groundwork for the adoption of the Kyoto Protocol (adopted in 1997 and enforced in 2005, though never ratified by the U.S.). This binding international treaty set emissions targets that varied according to nations' outputs, with an emphasis on curtailing the most pollutive among them (generally industrialized, Northern countries); (3) former U.S. Vice President Al Gore's critically-acclaimed film *An Inconvenient Truth* (2006), which dramatized and publicized global warming so effectively that it has become a discursive touchstone in contemporary U.S. popular culture and environmentalism;¹⁸ (4) federal legislative efforts (such as Lieberman-Warner's Climate Security Act of 2007, which was blocked by Senate Republicans in 2008, and Waxman-Markey's American Clean Energy and Security Act, which was passed by the House in 2009 but blocked by the Senate the same year), which aimed to instantiate carbon trading as a profitable, palatable method of curbing emissions; (5) the 2009 Group of Eight (G8) Summit, wherein the world's "principle actors" in climate

¹⁸ This film, and the national tour to follow, represents one achievement in a long list of Gore's effort to publicize climate change. Many applaud him for putting anthropogenically-induced climate change on political agendas across the world, beginning in 1970 when he organized the first congressional hearings on global warming.

politics terms “recognize[d] the scientific view that the increase in global average temperature above preindustrial levels ought not exceed two degrees Celsius” (G8). Considered an “historic agreement” by the G8, no specific goals were agreed upon as to future collaboration regarding reduction standards or benchmarks; it was simply acknowledged by the leaders who represent nations responsible for more than 40% of worldwide carbon emissions that a 2° C (3.6°F) increase in global temperatures would put our planet in jeopardy (Seager, 11-12); and (6) the 2009 UNFCCC Copenhagen Accord, which was intended to succeed the Kyoto Protocol as a binding, more aggressive standard of emissions-reductions given its overriding assertion that global temperatures not exceed 2° Celsius. Instead, it became a non-binding plan to revisit emissions standards at future UNFCCC meetings.

It is generally undisputed that these measures proved either unsuccessful or insufficient when compared to the depth, scale, and urgency global climate change presents. The most compelling evidence of this position, perhaps, is that today’s concentration of atmospheric carbon—just one of the varieties of industrial green house gases¹⁹ that plague our atmosphere—continues to skyrocket unchecked. For millions of years, Earth thrived at pre-Industrial levels of 275 parts per million (ppm); this level of CO₂ concentration has provided the basis for life as we have known it. 2014 levels climbed to 397ppm, a number most experts agree has undeniably pushed us past a “point

¹⁹ Though carbon dioxide is the most notorious greenhouse gas (GHG), other industrial GHGs include methane, nitrous oxide, perfluorocarbons, sulphur hexafluoride, and chlorofluorocarbons. To be sure, there are naturally-occurring GHGs that have always comprised Earth’s atmosphere, such as nitrogen, oxygen, water, vapor, carbon dioxide, methane, and nitrous oxide. These produce a greenhouse effect, by absorbing the perfect amount of the sun’s heat, thereby maintaining a temperature zone suitable for living things. “But,” as Cuomo instructs, “since the 1860s, over 500 billion tons of human-generated greenhouse gases have been spewed into the atmosphere, causing an additional *industrial* greenhouse effect, which traps too much of the sun’s energy and has therefore led to increased average global temperatures” (691).

of no return” where climate change will continue to alter, if not devastate, the planet (CO₂Now.org).

More controversial are explanations for *why* international and national reform measures have failed. In the U.S. arena alone, explanations quickly become complex: some blame climate change deniers for preventing proactive legislative, policy, and scientific pursuits, while some blame lax corporate regulations that allow businesses to continue pollutive practices unscathed. Others point toward “major political distractions” that have turned our attention away from climate change mitigation efforts: the U.S. war with Iraq (2003-2011) and ongoing military occupation of Afghanistan (2001-present), or the 2007-2009 economic recession. With these pressing political and economic concerns, as well as the general complacency of a variously consumerist and disempowered populace, the seemingly abstract concept of climate change—often perceived as a problem for the future in relatively privileged, and thus insulated, countries like the U.S.—has gotten kicked down the road. On an international scale, many criticize the governments of emerging economic powers like China, India, and Brazil for preventing international policy efforts to curb emissions as they pursue development and economic growth via pollutive energy consumption that mimics industrialized nations’ historical consumption patterns (though for its part, China is also the world’s leading developer of and investor in green technologies and energy production. Still, the nation continues its use of dirty energy apace) (McKibben, “Can”). And yet, in the spirit of ecological livability, which advocates “shifting the terms of recognizability to produce radically democratic results,” I suggest that these are the kinds of explanations that produce much

hand wringing, but little action. The next section describes how climate justice advocates and feminist environmentalists, on the other hand, illuminate three underlying value frameworks that indicate why major contemporary responses to climate change have failed to adequately confront it.

Insufficient Frameworks: Feminist Environmental & Climate Justice Critiques

Individualist Solutions

The first major limitation of the noteworthy climate change “interventions” put forth since the late 1980s can be summarized as the promotion of individualist, rather than institutional or community-based, solutions. Although for the purposes outlined in this chapter, this critique applies more to Gore’s film, *An Inconvenient Truth*, than the other five contemporary responses listed above, it does have wider relevance to policies and ideologies that promote individualism. In *An Inconvenient Truth*, after ninety minutes of conveying the scientific details and harsh realities of climate change in a fear-laden, apocalyptic documentary, it is only during the closing credits that the film offers any information on how viewers can prevent further ecological damage.²⁰ Most of the ideas presented promote such individual, consumerist efforts as buying energy-efficient light bulbs, lowering the thermostat, recycling, planting trees, and buying hybrid cars. But from a climate justice perspective, not only is this advice trifling in comparison to the scale of the crisis presented, it obscures the disproportionate role major corporations and

²⁰ This critique applies to the book version as well, as “what you can personally do to help solve the climate crisis” is reserved for the addendum (pages 305-321) to this 300-page volume. See the following sources for more detailed critiques of *An Inconvenient Truth*’s individualism: Pollan, 42; Jensen, “Forget,” 1-3; Luke, 1819; Nordhaus and Shellenberger, *Break Through*, 277; Aiken, 111; Cuomo, 700-703.

governments play in contributing to climate change. In so doing, *An Inconvenient Truth*'s depoliticized narrative fails to hold those institutional actors accountable.²¹

Such individualist rhetoric disguises the ways we have been shaped by culture to think of ourselves and others: it prevents us from recognizing our social positions and relations to power by assuming that we have all contributed to climate change equally and can therefore rectify it with equal capacity to act and consume. While individualist rhetoric proclaims to be about empowerment—"what *you* can do to save the earth"—it actually erodes political power: when Gore and other mainstream politicians and environmentalists suggest individualistic solutions while ignoring the wide range of resistance tactics available to U.S. citizens, the underlying assumption is that citizens are to be defined as consumers, and nothing more. For Derrick Jensen, author and climate activist, being told to substitute acts of personal consumption for organized political resistance proves that we have become "victims of a campaign of systematic misdirection" ("Forget," 1).

This is not to say becoming more aware of individual consumption habits is wrong or unnecessary. Cuomo reminds us that individuals are still responsible for doing their part to curb emissions, for even if household or individual acts make negligible impacts when compared to meta-level influences, like the military or energy policies, "it is a 'mistake in moral mathematics' to assume an act cannot be wrong because it has an imperceptible effect" (700). Unfortunately, our agency as consumers does not usually

²¹ To be fair, Gore attempted to address this critique by writing *Our Choice* (2009), which focuses on a variety of institutional, governmental, and industrial responses. Yet the gesture likely came too late: *An Inconvenient Truth* captured far more public attention than *Our Choice*, solidifying among U.S. citizens a sense of either disempowered helplessness or naïve reassurance in individualist efforts.

reflect a similar amount of choice in determining which resources power our goods and services. This has two effects. First, an insufficiency problem: “Even if personal sphere reductions that can be controlled by individuals and households are ethically imperative, they are insufficient for adequate mitigation. [L]arger-scale reductions that can only be achieved by meta-level emitters such as corporations and governments [will] still be necessary to avert climate disaster” (701). Second, because fossil fuel consumption is rarely a matter of personal choice, individual lifestyle efforts can engender the problem of widespread disempowerment (702).²² As Jensen reminds us, “personal change doesn’t equal social change” (“Forget,” 1). Therefore, many climate justice advocates recommend that money and energy otherwise spent on expensive or demanding lifestyle changes be targeted explicitly toward building movements that increase political awareness and power. Cuomo writes, “If such efforts were to result in [even] a few very significant policy changes...the payoff in terms of long-term mitigation could be great” (708).

Market-Based Solutions

Second, many of the proposals, such as The U.S. Clean Air Act, The Kyoto Protocol, U.S. legislative efforts, the G8’s 2°C acknowledgement and the Copenhagen Accord, reflect a policy trend to channel climate action into market “fixes” that encourage the industrialized minority to continue business-as-usual, and prolong the

²² Cuomo on disempowerment: “Studies show that there is a tendency for people to develop coping strategies such as denial in the face of cognitive dissonance or information about situations they have little power to change, and avoidant denial is all the more attractive when the truth is painful, depressing, or costly, as the truth about climate change certainly seems to be” (703).

consequences of climate change while exacerbating systems of inequality.²³ The Clean Air Act was the first to establish in U.S. law the practice of allowing businesses to purchase the right to pollute (Tokar, 80),²⁴ perhaps ushering in the wave of national and international market-based efforts to follow it. Recent U.S. legislative efforts to instantiate carbon trading (the Lieberman-Warner and Waxman-Markey bills) are prime illustrations of this tradition. In theory, one of two carbon-trading strategies are intended to transition businesses into emissions-reductions by making their emissions profitable: with “cap and trade,” companies who do not reduce their emissions according to a cap must purchase equivalent allowances from another company that *has* reduced its emissions. With project-based credits, companies who do not want to reduce their emissions or purchase them from another business can invest in projects that otherwise reduce emissions, like biofuels growth, methane burning, carbon-capture projects like forestry development, or wind power generation.

But in practice, carbon trading has demonstrated a different outcome, as climate justice advocates and feminist environmentalists have recognized. For example, the European Union’s foray into carbon trading failed to reduce emissions and prohibit polluters (Smolker & Houser, 2).²⁵ The reasons are many, beginning with the fact that

²³ According to Larry Lohmann, editor of *Carbon Trading: A Critical Conversation on Climate Change, Privatisation, and Power* (2006), “‘market fixes’ secure[] the property rights of heavy Northern fossil fuel users over the world’s carbon-absorbing capacity while creating new opportunities for corporate profit through trade” (33-34).

²⁴ According to Tokar, The Clean Air Act is a paradigmatic example of “free market environmentalism,” which was the “cornerstone” of the Clinton-Gore administration’s environmental policies (*Earth*, 26), and further solidified the increasingly popular institution of corporate personhood (80).

²⁵ See also England’s article, “Tax on Carbon: the only way to save our planet?” which cites a 2008 Stanford University study disproving encouraging statistics about cap and trade. Yet another investigation from Castle cites a 2006 study that reports a 1 to 1.5% *increase* in carbon output in the European Union

credits are often given away for free to wealthy countries and powerful companies—the greatest historical polluters (Lohmann, 73), thus normalizing the “right” to pollute.²⁶ Further, offsets might not reduce carbon emissions; instead, they may merely be moved from one place to another (Smolker & Houser, 1), thus perpetuating the idea that there actually exist “under-polluting” places. As physicist, ecofeminist author, and climate justice activist Vandana Shiva argues, poorer regions of the world tend to be ideal locations for trading offsets, because it is extremely cost-effective for corporations to plant trees (for example) in poor countries rather than to reduce emissions at their sources (“Injustice,” 1). This can put the burden of atmospheric clean up squarely on the shoulders of impoverished communities by disrupting ecosystems, livelihoods, and quality of life, while at times, failing to offset emissions in the first place.²⁷ Carbon trading has also been taken up in policy circles as a substitute for aid to poor countries: coined “trade not aid,” if poor countries can make money by selling their under-pollution credits, then foreign aid can be cut (Seager, 19). Most fundamentally, carbon trading enables emitter states to shed responsibility and “globalize” it (19), while reducing the political space available to transition away from fossil fuels. As journalists and climate justice organizers Rachel Smolker and Gary Houser aptly summarize, “With the gross

from the year before: “The statistics suggest the EU is still allocating too many carbon permits to enable the system to work properly.”

²⁶ Lohmann, 73. With regard to the climate bill that passed the House in 2009 and died in the Senate in 2010, Tokar writes, “some 7,400 facilities across this country would be given annual allowances to continue emitting carbon dioxide and other greenhouse gases. As many as 85 percent of the allowances would initially be given to polluting companies for free, reversing Obama’s campaign pledge that they should mainly be auctioned off” [“Cap(italize),” 2].

²⁷ Chapter 4, “Offsets—The fossil economy’s new arena of conflict” (219-328) in *Carbon Trading: A Critical Conversation on Climate, Privatisation and Power* offers an unsettling array of tragic stories from around the world that illustrate both the ineffectiveness of schemes to offset carbon, as well as the human injustices and ecological devastation they can cause.

inequities that leave billions starving in dire poverty, while a small portion of humanity gobbles resources and spews greenhouse gases, it seems unlikely that marketing carbon will resolve the problems” (1).

To cite one illustration of injustice caused by carbon trading (among many similar global stories), in “Who Pays for the Kyoto Protocol?” feminist sociologist Ana Isla argues that Costa Rica’s economic vulnerability combined with its rich rainforests made it a particularly attractive locale for Norway, Canada, Japan, Holland, Mexico, and Germany to compensate for over-emitting by purchasing carbon sink credits there. But in the process of revaluing and redesigning Costa Rica’s rainforests as lucrative parks—or “oxygen generating machines”—entire communities of *campesino/as* (peasant farmers) were evicted from their homes. Now “violently displaced” by the global carbon market, Isla documents how rural women were forced to prostitute themselves in cities in order to earn all or part of their living (210). As can be seen from Isla’s perspective, Costa Rica has experienced violent exacerbation of social inequalities, poverty, and human suffering—part of the hidden tragedy of carbon trading.

Another example of how market logic circumscribes climate policy involves the 2°C benchmark to which the G8 “historically” agreed upon in 2009. As feminist geographer Joni Seager reveals in “Death by Degrees” (2009), this target was established not according to ecological or even scientific logic, but rather by economic rationale. Though 2°C has become an “iconic goal in the global climate policy arena” (Seager, 12), there is little agreement, let alone research, among scientists as to how such a benchmark could be quantified, and only erroneous association of this benchmark with the UNFCCC

or IPCC recommendations (12-13). As Seager explains, 2°C of global warming is not a real geophysical threshold:

“It does not mark a boundary between little and much danger. It does not demarcate a known tipping point, below which there is minimal threat to the world’s ecosystems and human populations, above which the danger is remarkably higher. In reality, climate science is unable to make such fine distinctions; in reality, geophysical systems do not work that way. In truth, 2° represents a notional point on a spectrum of...consequences...between ‘likely to be quite bad’ and ‘likely to be really catastrophic’.” (14)

Instead, 2°C is “patently a political target” based on the 1979 economic modeling of economist William Nordhaus, who merely speculated about the financial trade-offs of climate mitigation (Seager, 13). Discussion of “trade-offs” aside (climate justice advocates dispute the ability for economists to accurately weigh and quantify social and environmental costs), this finding demonstrates that Nordhaus’ speculation framed climate change discourse from the get-go. “[C]onstrued ideologically in the service of distinctive interests” (14), it was determined that a two-degree rise in Earth’s temperature would definitively bring global warming “‘home’ to the rich world” (16), for it indicates a rough point at which “truly *global* changes (ocean current shifts, rapid ice sheet melting) will supersede regionally manifested ones and, [at which] temperate-latitude impacts, such as increased hurricane intensity in the US, are predicted to accelerate” (16). Only at or over this threshold where climate change (supposedly) becomes catastrophic, would the G8 apparently consider climate change mitigation a reasonable cost worth financing.

Indeed, there are a plethora of larger concerns ignored in the near-exclusive adherence to market capitalism in order to confront climate change. Climate justice

advocates demand more effective market approaches, like setting strict caps on emissions, avoiding the commodification of carbon through trading altogether, and taxing corporations directly rather than setting targets per country, both for production—wherever their facilities are located—and for transport (Shiva, “Injustice,” 2). Revenues from these taxes could then be returned equitably to citizens in order to finance climate adaptation and mitigation (ibid). At the same time, as Gore advocates throughout *Our Choice*, governments must provide incentives for businesses to invest in, develop, and/or retrofit their industries with clean, renewable energy.

On an international scale, feminist environmentalists and climate justice advocates like Shiva remind us that mandating emissions levels per nation, as The Kyoto Protocol does, may prove to be a flawed approach because citizens do not contribute equally to carbon pollution. In a globalized economy, carbon is emitted unevenly, with certain nations, like China, maintaining a disproportionate number of pollutive facilities owned by corporations in other nations, like the U.S., who outsource their industries and labor. Likewise, certain nations produce a disproportionate amount of goods and resources for export on international markets. Much of China’s carbon emissions, for example, should therefore be counted as the U.S.’s (“Injustice,” 2). Such redistribution of burdens and responsibility should also extend to nations largely responsible for over-consuming atmospheric space, by compensating those most vulnerable to climate catastrophes via “climate debt” reparations.²⁸ In sum, though some extremely strident

²⁸ Climate reparations are demanded on two levels: 1) in order to address historical injustices associated with inequitable industrialization and climate change, originating in the genocide of indigenous nations, transatlantic slave trade, colonial era, and invasions (Klimaforum People’s Declaration, 5), and 2) in order to address the inequitable consumption of atmospheric space by wealthy nations and industries, and the

economic responses will be crucial, the words of Joni Seager are instructive: “This...is a good moment to be especially critical about the siren song of the ‘markets’ and to be especially cautious about the wisdom of using a market-based approach to solve problems that market-based approaches have caused” (19).

Global Management Solutions

The final major limitation with each of the six main contemporary attempts at forestalling climate change is that they champion elitist leadership, rather than democratically designed solutions. Whether intentional or not, the manner in which climate change is framed only elevates certain leaders (elected U.S. officials and U.N. Ambassadors), upholds Northern scientists and policymakers as *the* valid “knowers,” and reinforces paternalism via the maintenance of unequal social statuses (there are either active players in climate politics or passive victims). In this manner, global citizens are effectively funneled toward “the only reasonable solution”: one definition of climate change exists, few alternatives are reasonable or realistic, and a handful of privileged leaders utilizing a narrow repertoire of ideas will guide us out of climate chaos.

An example that reflects the management style of the six climate change responses in question lies in Gore’s promotion of a “Global Marshall Plan” in *An Inconvenient Truth*.²⁹ This scheme is inspired by the U.S.’s Marshall plan of 1947, which offered Western Europe emergency economic relief as well as long-term structural reorientation in order to grow their economy, and ultimately, create a capitalist-

concurrent uneven distribution of climate change’s adverse affects on impoverished nations or communities (1, 5).

²⁹ Gore explains his Global Marshall Plan in greater detail in his former publication, *Earth in the Balance* (1992).

democratic bloc robust enough to fend off the spread of communism (*Earth*, 296). In this tradition, Gore suggests a “Global Marshall Plan” to unite the entire world under one regulatory climate policy, by controlling population growth,³⁰ channeling efforts into technical fixes, and setting global standards for ecological economic value, regulatory frameworks on environmental matters, and environmental education (Luke, 1812).³¹ For those suspicious of Gore’s endeavors, like professor of political science Timothy Luke, this plan fuels his fear that Gore advocates launching “a new ‘planetary ethic’ for managing the entire planet from the United States of America for maximum ecological and economic sustainability” (ibid).³²

The myopic focus on market-based solutions coming from the most powerful leaders in the world give cause for concern that national and international climate change policy efforts can become yet further instances of neocolonial management schemes, this time on a planetary scale. For, as Seager reminds us, to the G8 nations, “climate change is not yet a threat in their own backyard, or they believe it is not” (15). She writes, “Many ecosystems and peoples will hit limits to adaptation long before 2°C, and some

³⁰ Regarding this particular recommendation of Gore’s, it is worth mentioning that for many years, numerous feminists have criticized appeals for population control by environmentalists. Wary of the ways in which women—especially impoverished women of color in the Global South—are often blamed by first-world environmental advocacy groups “overpopulating the Earth” and who thus become targets for racist fertility control measures [for more, see Seager, “Rachel Carson,” (966-969)]. Such measures not only distract from the true culprits of global resource depletion—over-consumptive, wealthy nations—while masking underlying the underlying systems that perpetuate high birth rates in the first place: poverty, sexism, and lack of education and health care. Global high fertility is a myth, as Betsy Hartmann points out in “The Great Distraction: ‘Overpopulation’ is Back in Town,” actually only persisting today in a few nations due to deep class and gender inequities.

³¹ See Gore, *Earth in the Balance*, Chapter 15: “A Global Marshall Plan,” 295-360.

³² This comment was made specifically with regard to Gore’s Alliance for Climate Protection, which Luke uses to illustrate “envirocratic” networks. According to him, they unite liberal capitalists [corporate elites, policymakers, and mainstream Western environmental NGO heads] who have a mutual interest in coping with ecological collapse, “but still turn a profit, stay in power, and dominate the debate” (Luke, 1812).

already have” (15). In light of this reality, it seems dually unjust to ignore the insights and leadership of communities and nations affected first and foremost.

Many of those insights and appeals to leadership are encapsulated in the Klimaforum People’s Declaration, “System Change, Not Climate Change” (2009). Signed by more than 500 organizations and influenced by the participation of over 50,000 members of civil society who gathered in Copenhagen for the Klimaforum People’s Summit, the declaration embodies a counter-discourse produced to influence the UN COP15’s Copenhagen Accord.³³ Numerous demands against “closed groups of powerful countries,” “unequal access and control over the planet’s limited resources,” and “neo-colonial suppression of southern peoples, denying them rightful ownership and control of their resources”³⁴ permeate the declaration. Likewise, time and again, signatories advocate civil societies’ right to food sovereignty, to determine their own economies and systems of agriculture, to make use of local knowledge and appropriate technologies, as well as democratic ownership and control of their economies and energy grids. Further, signatories demand power in shaping the definitional and responsive parameters of climate change. For example, voices “from below”³⁵—the global South, radical

³³ The Klimaforum09, which became the single largest gathering of climate justice advocates to date, took place in Copenhagen, Denmark from December 7 to 18, 2009 in order to provide an inclusive, alternative forum to the UNFCCC COP15. With the help of hundreds of volunteers, events included lectures, panels and debates, poster presentations, industrial exhibitions, artwork displays, films, musical concerts, protest-planning, and collective meals. It brought together great minds and world leaders, such as Vandana Shiva, Wangari Maathai, Bill McKibben, Maldives President Mohammed Nasheed, Naomi Klein, and Nnimmo Bassey. Over this period of two weeks, participation in drafting the Klimaforum People’s Declaration was solicited by anyone who so desired. On December 18, 2009, “System Change, Not Climate Change,” was presented by Mathilde Kaalund-Jørgensen and Juan N. Rojas to the UNFCCC Plenary and distributed.

³⁴ Klimaforum People’s Declaration, 2.

³⁵ Writers and signatories of The Klimaforum People’s Declaration identify in this manner (using as well such signifiers as “the periphery,” “the people,” and “marginalized”) (Preamble), further specifying their diverse, yet structurally disenfranchised, makeup across ages, genders, ethnicities, faiths, communities, and

environmentalisms, grassroots organizations, indigenous perspectives—often advocate strategies that fall outside the framework of global management solutions, like community gardens, market, farm, and energy co-ops, or fair trade. They may also suggest ideas that directly confront capitalism and government, such as boycotts, strict corporate regulations, civil disobedience, property damage, or violence—unspeakable actions when elite policymakers circumscribe climate change.³⁶ By consequence, the very diverse ideas necessary to ensuring an inclusive, democratic, and contextualized response to climate change are written out.

Nationalizing and globalizing environmentalisms do hold the potential for comprehensive solutions, as ecofeminist Noël Sturgeon admits.³⁷ Yet she cautions that they often impose policies and practices on people less powerful (106). Feminist geographer Rachel Slocum agrees: “Having something in common is important; claiming too much in common erases differences” (433). Even under the guise of conservation, sustainable development, fair trade, or Green Revolution,³⁸ such undemocratic schemes have historically resulted in political suppression, toxic lands, water, air, and/or food, and

nationalities as workers, peasants, fisher folks, indigenous peoples, people of color, small-scale farmers, and urban and rural social groups.

³⁶ I find Cuomo’s philosophical perspective especially useful when considering the ethics of engaging in illegal activity in response to climate inaction: “When a serious harm is at stake it may even be excusable to use otherwise ethically questionable means to try to mend the situation. For instance, if you accidentally poison my dog with a concoction whose antidote is possessed only by you, yet you refuse to give me the antidote, it would arguably be permissible for me to steal the antidote from you to save my dog” (705-6).

³⁷ The universally ratified Montreal Protocol of 1987, which aimed to phase out the use of ozone-depleting chemicals such as CFCs, exemplifies this: today CFC use is down ninety-percent (McDonnell).

³⁸ For land not prized as pristine, “sustainable development” too often takes the form of Western corporate domination in developing countries. Beginning in the 1980s and 1990s, it became the normalized agenda for reconciling economic development with environmental protection (Tokar, *Earth for Sale*, 170), typically seen when Western corporations “transform undeveloped poverty into developed poverty” (169) by exploiting their natural resources, labor standards, and economic powerlessness. See also Vandana Shiva’s *Staying Alive* (1988) for a similar argument regarding the Green Revolution (1-2), or Nalini Nayak’s “Development for Some is Violence for Others” (109-120) on “sustainable development.”

loss of land ownership, control of resources, and cultural knowledge. Thus, it is not hegemonic leadership, but powerful coalitions at local and global scales that will be necessary to see us through a planetary calamity.

Taken together, the brand of environmentalism championed by these acts, international treaties and agreements, and popular media amounts to what Luke calls “sustainable degradation,” a form of environmentalism that is thoroughly entrenched in capitalist values, creating products and policies tied to “greener growth, not necessarily truly green growth; a cleaner environment, not a really clean environment; individual choice, not collective institutional transformation; and painless consumer changes... as new principles for living, not burdensome producer regulation” (1819). Through these channels, our politicians and ambassadors narrowly delimit which interpretations of climate change are speakable, and set the boundary between possible and impossible action.

Equipped with the analytical tools that enable us to recognize the dangerous predicament world leaders have placed us in, feminist environmentalists and climate justice advocates work toward robust, resilient modes of ecological living. These camps have developed three main strategies for bringing the existence and precarious plight of nonhumans and marginalized peoples into focus. They demonstrate *which* policies, assumptions, actors, and perspectives—often masked as they are under the guise of progress, sustainability, and democracy—need to be resisted. *Enacting the alternatives* they envision—a) collective, not individualist, action; b) strict market reform as well as bold alternatives to market-based solutions; and c) situated, pluralist, grassroots, truly

democratic leadership, participation, and collaboration in climate change responses—could be the key to ensuring the entire planet’s *thrivability*. Through powerful critiques as well as the alternative visions for a collective future embodied in the antithesis of conventional approaches to climate change, feminist environmentalisms and climate justice advocates promote the twin objectives of ecological livability—that is, “survivability” and “thrivability”—simultaneously.

Lessons on Livability in REDD+ and Beyond

In transitioning from the critiques and arguments posed here to upcoming discussions on ecological restoration, I close this chapter by considering another touchstone in conventional climate change politics enacted between *The End of Nature* and *Eaarth*: the UN-REDD Programme. I select REDD not because it represents a stark alternative to the aforementioned “insufficient frameworks,” but because it embodies an ambiguously beneficial attempt to apply ecological restoration on a planetary scale in order to mitigate global emissions. That is, by certain interpretations, REDD is merely another business-as-usual scheme that has clearly emerged from the kinds of individualist, market-based, and globally-managed responses to climate change familiarized by our media, elected officials, and businesspeople, and by consequence, it cannot promote ecological livability. Yet by other estimates, REDD is appreciated for the enormous potential it holds to mitigate climate-changing emissions while delivering other beneficial ecosystem services and economic opportunities for developing nations. Utilizing the feminist environmental justice analyses that enabled my earlier conclusions,

this discussion teases apart some of REDD's benefits from its drawbacks, while considering the extent to which it can enable ecological livability.

The United Nations Environment Programme developed a plan during the 2005 UNFCCC entitled Reducing Emissions from Deforestation and Forest Degradation (REDD), during which the Coalition for Rainforest Nations proposed that there be incentives for countries to control emissions by reducing deforestation (Allison, 104; Erazo). Through agricultural and cattle pasture expansion, development, and logging, deforestation and forest degradation are major contributors to climate change, accounting for 20% of global greenhouse gases (UN-REDD).³⁹ Launched in 2008 and involving fifty-three countries, REDD is an offset program wherein polluters can purchase carbon credits generated by governments, companies, and communities for protecting or creating forests elsewhere (ibid). According to the UN, "financial value" is created for carbon stored in forests, and incentives are offered to developing countries to secure those forests in order to reduce global emissions (ibid). *From this description alone, questions arise about the trustworthiness such a globally managed, market-based program can inspire among forest-dependent communities. How are the financial values for forests and forest services, like capturing carbon, determined, and by whom? And how do those values compare to the value placed on the continuation of business-as-usual carbon emissions?*

While ecological restoration is not explicitly mentioned in the framework, funding for forest restoration is made possible with the inclusion of "sustainable management" and "carbon-stock enhancement" language (Alexander et. al., 683), so

³⁹ This amounts to more than the entire global transportation sector and is second only to the energy sector (UN-REDD).

restorationists have generally approached REDD with enthusiasm. According to Alexander et. al., over one billion hectares [an area larger than Canada (Allison, 104)] of formerly forested lands, or 6% of Earth's total landmass, are presently suitable for restoration (685). If enacted, REDD could have enormous potential to secure extremely effective carbon sinks: by 2030, this amount of restored land could sequester 140 GtCO₂e.⁴⁰ To put this in perspective, in 2000, greenhouse gas emissions were estimated at 42 GtCO₂e (685). *REDD represents the single greatest opportunity ecological restoration has ever been afforded to improve ecosystems around the world. Especially on a planet of rapidly changing natures, how should restoration be performed, at what scale, and by whom?*

It is clear from these facts that in forested ecosystems around the globe, ecological restoration can be of major assistance with climate change mitigation and adaptation while providing other tangible biosocial benefits. This is perhaps most true of locales in dire need of assistance; marginal, low-productive lands and communities stand to gain the most from restorative efforts, for these “will almost certainly return many more ecosystem services than just carbon sequestration and will benefit large numbers of species, not just the trees being promoted as living carbon stores” (Allison, 104). Furthermore, the UN-estimated \$30 billion a year North-South flow of funds could mean multiple advantages for recipients, including economic development, biodiversity conservation, and the protection of ecosystem services among the world's most marginalized nations (Erazo). *This flow of funds is substantial, but in order for benefits to be sustained, funding patterns must also promote financial parity among Northern and*

⁴⁰ That is, 140 gigatons of carbon dioxide equivalent.

Southern nations. How can funding be allocated in order to redistribute (and equalize) climate-related vulnerabilities and resiliencies between hemispheres?

However, since 2005, indigenous and affected peoples throughout the world have been skeptical about how the REDD program will impact local ownership and management of forests, a topic that speaks to earlier critiques of globally-managed climate change solutions. Even according to the UN, the stakes are high for these groups: “The rural poor are particularly dependent on forest resources. As many as 300 million people, most of them very poor, depend substantially on forest ecosystems for their subsistence and survival. The 60 million indigenous people who live in forest areas are especially dependent on forest resources and the health of forest ecosystems” (UN-REDD). There are fears that in the interest of gaining sometimes desperately-needed financial boosts as well as opportunities for employment, national governments who have partnered with REDD will not be inclined to appreciate the interests and concerns of local stakeholders (Erazo). Inadequate governance of REDD projects could result in short-term gains for a few public and private stakeholders with vested economic interests, rather than long-term gains for ecosystems and communities (Alexander et. al, 684). Already, rising land values associated with this recently opened carbon market have “resulted in illegal land grabs, the appropriation of natural resources, reversals in land reform initiatives, food/water insecurity, and compromised and corrupt governance” (687). There exist valid concerns, borne of experience, that REDD+ restoration will entail the continued exploitation of Global South communities, mirroring the Kyoto Protocol-induced displacement and impoverishment of Costa Rican *campesino/as*, for

example. *Fears expressed, especially by Global South groups, reflect the major evaluative impetus of feminist environmental justice: which natures will be livable, and for whom?*

To help address these problems, a new version of REDD known as REDD+ was approved at the 2009 15th UNFCCC in Copenhagen (Allison, 105). The plus sign “is intended to highlight the...importance of paying attention to the needs of local communities” (Erazo). Needs may include provisions for promoting economic opportunities for local stakeholders, such as hiring local, indigenous people to monitor and manage REDD+ projects, but this is not specified by the UN. As Allison argues, REDD+ does not explain *how* economic opportunities will, or even should, be enacted (105). *While it is notable and laudable that the UN recognizes how connected the well being of indigenous peoples is to the health of their environments, without policy safeguards in place that spell out how affected peoples will be involved in the funding and management of related programs, the extent to which REDD+ can be trusted to promote ecological livability is dubious.*

Furthermore, as Dennis Martinez, the founder and chair of the SER Indigenous People’s Restoration Network explains, even if indigenous stakeholders are hired to manage and monitor REDD+ lands, REDD+ still does not specify that they can continue *owning* and *using* their lands. Without securing this important policy, indigenous peoples could be prevented from maintaining their homes, cultures, and lifestyles (Allison, 105). The International Indigenous Peoples Forum on Climate Change summarizes these concerns in an indisputably critical stance:

REDD/ REDD+ will not benefit Indigenous Peoples, but in fact will result in more violations of Indigenous Peoples' rights. It will increase the violation of our human rights, our rights to our lands, territories and resources, steal our land, cause forced evictions, prevent access and threaten indigenous agricultural practices, destroy biodiversity and cultural diversity, and cause social conflicts. (Erazo)

It bears noting that so many people around the world object to a multi-national effort that stands to make an enormous contribution to mitigating the effects of climate change—certainly a goal that most indigenous groups themselves promote. But in learning from situated knowledges and the importance of appreciating “nature’s publics,” their concerns should invite considerable deliberation. What can UN-REDD+ learn from critiques of, and objections to, this program? And how can those critiques be transformed into policy initiatives that deliver trustworthy benefits to indigenous communities while safeguarding their forests?

It must be recognized, however, that certain other indigenous peoples and organizations take a generally pro-REDD+ stance. For example, the Confederation of Indigenous Organizations of the Amazon (COICA), a transnational indigenous rights organization coordinating efforts by indigenous federations in nine Amazonian nations, has partnered with multiple REDD+ parties. Their first REDD+ project, as recounted by Erazo, was a collaborative effort between the U.S. Environmental Defense Fund (EDF) and Woods Hole Research Center. In it, indigenous Ecuadoran Amazonians were trained to measure carbon storage potential in standing forests. In the words of Chris Meyer, project coordinator of the Amazon Basin for EDF:

Instead of having outsiders come in and measure the carbon in the community's trees, indigenous communities can measure it themselves, earn good wages, and learn to value another resource in their forests: carbon. ... The training workshop,

which has been adapted for numerous other indigenous groups in the Amazon Basin, teaches and empowers indigenous people with technical skills needed for measuring carbon trapped in forests, like using a GPS to find specific coordinates; measuring out a 40 x 40 meter “parcel” of forest; and measuring the diameter of each tree in that area ... indigenous peoples with forest carbon measuring skills will be able to generate not only good jobs for locals based on conservation, but also generate important information regarding the amount of carbon in their lands that will help them make better land management—and conservation—decisions for the future. (Erazo)

From this description, it appears quite possible that indigenous groups like the COICA can “[tap] into international concerns about the environment to obtain benefits for [themselves]” (Erazo). *Yet how far this kind of short-term employment and specialized training work can take people and ecologies is another concern about how well REDD+ can sustainably meet the needs of planetary carbon sequestration as well as foster long-term indigenous well being. How can the successes enjoyed by REDD+ recipients be capitalized upon and expanded into the future, even after forests have been restored, stabilized, and secured? Should REDD+ include a transition plan involving funding, education, and/or employment assistance to be utilized for affected stakeholders after forests are restored?*

In most cases, by stewarding their lands for generations and sometimes centuries, local and indigenous communities not only benefit their own peoples and ecosystems, but also benefit the rest of the world. In fact, as Alexander et. al. report, “empirical evidence suggests community-managed forests are subjected to less degradation than other management schemes” (687). A comparative study discussed by Allison supports this claim: “local, indigenous people were as accurate as professionals” (105). Improving the lives of forest-dwellers who are, or may be, recipients of REDD+ funding will thus be

crucial to the long-term success of programs like REDD+. *Herein lies a lesson of intersectionality and environmental justice: the well being of the environment and its peoples cannot be distinguished. Should REDD+ funds also be allocated, then, toward improving the lives of local stakeholders at socio-political levels, when necessary?*

But in order for REDD+ to be ecologically effective *and* socially just, it must safeguard the land tenure of local communities and gain their full, voluntary participation (Alexander et. al., 687; Allison, 105). Funding must actually reach the communities and landholders, who should also have a say in allocating those funds and designing restorative projects. Transparency and communication between policy makers, scientists, and laypeople is necessary. And perhaps most importantly, programs like REDD+ cannot be relied upon as exclusive efforts to mitigate climate-changing emissions. Indeed, a generalized and encompassing objection to REDD/+, which speaks to previous critiques of individualist and market-based solutions in this chapter, is that it provides little incentive for corporations and governments to reduce carbon emissions. In fact, since it may cost less in many cases to subsidize forest preservation/restoration than reduce emissions, REDD+ could actually create a disincentive for reducing emissions at their source. Thus far, most nations have shown little interest in regulating greenhouse gases through high levies (Allison 105-106), but quite a bit of effort in offering individualist (non)solutions to citizens who are defined as consumers, thus solidifying the continuation of business-as-usual politics and economies. The UN recognizes this dilemma when they write, “The implementation of REDD+ must co-exist with significant emission reductions in both developed and developing countries if we hope to curb

climate change (UN-REDD). The cost of releasing greenhouse gases will therefore have to “increase via taxes or fines to the point that achieving actual reductions in emissions becomes more cost-effective than continuing to release carbon while paying for carbon sequestration elsewhere,” as Allison argues (105-106). *By consequence, production and consumption patterns in the lifestyle practices of individuals residing in wealthy nations will have to shift; for example, no longer will Americans be able to feel self-assured in their environmentalism by buying their way through climate change, and no longer will overly-consumptive lifestyles be possible. At least as much effort, deliberation, and funding—if not more—should be focused upon transforming the practices that input carbon and other greenhouse gases into our shared atmosphere, as is spent upon end-of-pipe solutions such as REDD+.*

In light of this discussion, it is clear that any planetary initiative to curb emissions will have to do so with the full participation of the community members each program effects. There is nothing inherently wrong with developing and implementing climate mitigation, adaptation, or remediation strategies at large scales; indeed, wide-scale efforts and sizable funding are exactly what is needed now. Problems develop when programs—whether large or small scale—foreclose collective, non-market, participatory initiatives (although this is much easier to control at small scale). Because, as Butler reminds us, vulnerability is distributed in radically different ways around the world (24), any program, on any scale, will have to be responsive to the contextualized needs of every biosocial community.

According to Allison, “In the twenty-first century, ecological restoration will be increasingly important as a tool to mitigate and repair the damage due to global climate change” (104). But while REDD+ exemplifies a noteworthy attempt at initiating ecological restoration and all of the benefits it can deliver, it may simultaneously exacerbate the precariousness of lives already made vulnerable by climate change. As the following chapter will explain, *how* restoration is conceived, *what* it is intended to accomplish, and *for whom* it should benefit, will be crucial considerations for using restoration toward the ends of social justice *and* ecology. *Justice-oriented* restoration, I will argue, may present both a trustworthy alternative to projects like REDD+, as well as a possible model for recipients of REDD+ to enact, because it embodies the antithesis of conventional approaches to climate change. In so doing, it enables the life chances and opportunities essential to ecological livability.

Chapter Three

Restoration's "Return": Toward Justice-Oriented Ecological Restoration

Introducing Ecological Restoration

Can ecological restoration be faithfully aligned with a material feminist politics of nature? And if so, might restoration then constitute a compelling method of feminist environmental justice?⁴¹ As the following chapter details, answering both questions in the positive hinges upon a qualitatively different approach to restoration than typically conceived. This approach is made possible by the contradictions that lie at the heart of restoration's identity, contradictions that threaten its trustworthiness as an arbiter for naturalcultural sustainability, and by consequence, its efficacy. In this chapter, I explore these contradictions in order to demonstrate to restorationists that they can—and ought to want to—contribute to feminist environmental justice, and to those concerned with feminist environmental justice that restorationists have something to contribute.

⁴¹ I highlight material feminism and distinguish it from feminist environmental justice in order to do justice to the distinct contribution material feminism makes in deconstructing the material/discursive dichotomy that underpins the nonhuman/human dichotomy. As discussed in Chapter One, "material feminisms" critique postmodern feminism's reliance on the discursive, and deconstruct the material/discursive dichotomy and develop theories that "productively account for the agency, semiotic force, and dynamics of bodies and natures" (Alaimo & Hekman, 6). Without privileging any of these elements, material feminists "explore the *interaction* of culture, history, discourse, technology, biology, and the 'environment'" (7; my emphasis). A politics of nature informed by material feminism, then, is one wherein nature—and all kinds of animate creatures and inanimate forces—are alternately (and often simultaneously) agentic and influenced by humans and culture.

Whereas some feminisms and environmental justice theories promote notions of justice, equality, and wellbeing by advocating for expanded definitions of "the human," thus buttressing human/nonhuman binaries, material feminisms contribute to feminist environmental justice by acknowledging that because "the human" has always been defined in ways that exclude or marginalize other humans, refusing to draw sharp lines between the human and nonhuman also resists human oppression of other humans, *without* reinscribing the human/nonhuman binary.

Another argument running throughout this project is that restoration historically involves some degree of “return”—that is, returning a site to a previous state of ecological function—but the kind of “return” I promote implies a “turning” toward a future where creatively restored ecologies may or may not incorporate historical precedent and also function with the possibility for human use and interaction. Such a creative vision is, for better and for worse, now *demanding* of restorationists—as well as the rest of us—by climate change. So, while my vision of a future restoration will indeed entail a “return” to function, it may not always entail methods, actors, and approaches that are typical in projects and theorizations of conventional restoration. Instead, because our natures are under such an extreme amount of climate-related stress, standard restoration models may no longer be relevant. These novel situations could be harnessed toward novel creations, making a space work for multiple and diverse human and nonhuman stakeholders. This chapter demonstrates how an approach to restoration informed by material feminist and feminist environmental justice perspectives could optimize some degree of resolution to the challenge of climate change.

Conventional Ecological Restoration

Conventional ecological restoration is the intentional, sustained attempt by humans to compensate for damaging influences (usually pollution, development, and—as I will discuss further in this chapter—invasive species⁴²) on an ecosystem, and manage it

⁴² Ecologists define invasives as “plants, animals, or pathogens that proliferate, spread, and persist to the detriment of the environment” (Williams, 156). They typically exhibit high reproductivity and tolerance to stress (161), due in large part to the fact that in a nonnative setting, they no longer have predators or pathogens to keep them in check (160). New climate and terrain may be more conducive to their proliferation (160). The most successful invasives also have the ability to hybridize (160). Finally, the most common trait of invasives is their preference to proliferate in disturbed soil (151). Beginning in the colonial era and continuing today, razed forests, large animal grazing, Western agriculture, natural resource

for desired qualities.⁴³ Though “desired qualities” may vary, restorationists traditionally strive to manage an ecosystem toward self-sustenance and homeostasis by ensuring that species with a long coevolutionary history on each site can thrive.⁴⁴ In response to degradation or species loss, restorationists guide ecosystems within what is called a “historical range of variability” (HRV) so that they may resume behaving as if disturbance never occurred. Gauged via observance and records, HRV guides restorationists to distinguish “normal” changes that have been observed to endure within dynamic ecosystems versus changes that exceed the system enough to embody a significant departure from past composition and function (Allison, 90). As biologist Stuart Allison puts it, “though ecosystems are dynamic and changeable, they cannot change too much and remain the same ecosystem. At some point, extreme change must lead to the formation of a new type of ecosystem” (90).

extraction, globalized travel and trade, and development continually feed the spread of invasives (Crosby, 151). And the transcontinental horticulture trade, which involves nurseries, botanical gardens, and individual gardeners, ensures a steady supply of escaped nonnative plant species (157).

According to naturalist David Williams, “after habitat destruction, invasives cause more harm to natives than any other major threats such as pollution, disease, or overharvesting. They alter habitat, drive native species to extinction, reduce water supplies, and threaten agriculture. A 2000 study placed the annual economic cost of invasive species in the United States at \$137 billion” (156). Consequently, conservation biologists say we are living in an age of extinction, “the most lethal one since the time of the dinosaurs” (Hall, xi). Thus, it is unlikely that biodiversity will recover from today’s extinctions (Williams, 166).

⁴³ For other, similar definitions, see Gobster: “[The 1998 International Symposium on Society and Resource Management attendees] defined restoration as ‘intentional human practices to actively manage areas for their desired natural qualities’” (11), and Jordan: “everything we do to a landscape or an ecosystem in an ongoing attempt to compensate for novel or ‘outside’ influences on it in such a way that it can continue to behave or can resume behaving *as if* these were not present” (*Sunflower*, 22).

⁴⁴ Aspects of this definition are derived from Bratton, who writes: “A common implicit goal of ecological restoration is to restore a self-sustaining, homeostatic system whose component species have a long coevolutionary history.’ One could thus define an ecosystem once ‘sick’ but now restored to ‘health’ as: self-replicating or self-sustaining; characterized by or developing toward homeostasis (perhaps undergoing repeated disturbance but returning to a similar state); having biotic components that are interrelated and occur in established associations” (58).

Yet while “restore” commonly implies a return to an original, the term is said to bely the essence of this field, which does not aim to arrest change or recreate a replica of its historic past, as if an original ecology ever existed.⁴⁵ Rather, in recognition that ecologies are always in flux, restorative processes aim to *redirect* an ecological system using the past as a guide—in order to set it in motion again—so that it *acts* as it did before the novel introduction(s) (Jordan, *Sunflower*, 21-22), that is, when a multitude of place-specific actors depended upon one another to flourish in an intricate, dynamic and diverse system.

To redirect a site, restorationists employ a variety of methods: they eliminate invasive species via weeding, setting landscapes on fire, introducing benign species to control the invasives, and/or chemically treating them with pesticides or growth inhibitors; they reintroduce native species via planting or gathering and disseminating seeds; they prevent soil erosion through plantings, tree and fabric staking, or invasive removals; they re-meander channelized streams and rivers by destroying dams or concrete channels, re-plumbing landscapes, closing ditches, or moving rocks and land; and they replenish soil health by adding nutrients, fungi, other organic matter, compost, and/or mulch. Restorationists may scuba dive under water to fasten plants and coral with metal staples (Jordan, *Sunflower*, 11). They may probe a former farm field with metal stakes in order to locate and break drainage tile that prevents a watershed from draining adequately (12). They may plant hundreds of different species, or perhaps hundreds of

⁴⁵ As Jordan argues, “restoration as I define it is not about a return to an Edenic ‘nature’ outside history. It is about the recreation and maintenance of *historic* landscapes defined in ecological terms, with or without reference to the ambiguous and in many ways problematic ideas of ‘nature’ or ‘natural’ or ‘native’ ecosystems” (*Sunflower*, 24).

just one or two species. They may disassemble stone fences, scattering rocks according to glacial precedent (12). In “the spirit of...act[ing] in concert with [the forces of nature],” restorationists may also employ such potentially controversial methods as reintroducing droughts, diseases, insects, floods, or predators (28). They may enlist the help of nonhuman creatures, some native, some nonnative—bison in prairies, birds and insects in forests—in order to control invasive plants or animals, restore soil nutrients, or disseminate beneficial seeds (12). And sometimes, they simply wait to take advantage of nature’s disruptive forces, as when Hurricane Andrew swept away invasive plants from southern Florida, “clearing the ecological slate for the reintroduction of native species” (28). Methodologies employed are often as unique as the landscape or waterway with which restorationists are working. A site might require seasonal monitoring and tending over a period of many years, or a one-time intervention. And restorationists work in a variety of scales, weeding and replanting every square foot of a small site, for example, or undertaking one generalized action at a large site, like a prairie burning, and then leaving it be. According to founding restorationist William Jordan III, “Today thousands of projects are underway in virtually every kind of ecosystem, from tall grass prairies and alpine meadows to...coral reefs and tropical forests” (*Sunflower*, 13).

Restorationists have undoubtedly made headway compensating for environmental destruction and species loss. Over the past thirty to forty years, restoration has enabled near-extinct species to recover, and hundreds of thousands of woodlands, wetlands, prairies, and savannas to function more fully (Palamar, 285-6). Some well known examples of successful restoration projects include the restoration of gray wolves in

Yellowstone National Park, an ongoing, multi-billion dollar restoration of the Everglades, the return of fire to fire-dependent ecosystems in the Northern Plains, and the removal of dams for the first time in history (Hettinger, 27). More successful case studies abound (see the Society for Ecological Restoration's abbreviated list for examples⁴⁶), but we are still in the early years of restoration; only recently have quantifiable data emerged to judge restoration's benefits. Long considered a mere "act of faith on the part of nature-lovers," a 2009 study measured how well eighty-nine random, once degraded sites around the planet fared for biodiversity and ecosystem services after being restored, and demonstrated forty-four and twenty-five percent improvement rates, respectively (Borrell).

Brief History

Like most other U.S. environmentalisms, restoration is rooted in the conservation and preservation movements of the early twentieth century (Bratton, 53). During this period, ensuring that native ecosystems were protected not only meant restoring them, but keeping people and their activities out (55; Hettinger, 27). Historian Marcus Hall traces early rumblings of this ideology to the famous conservationist George Perkins Marsh, who incited an "important turning point" in the history of environmentalism with *Man and Nature* (1864). It comprises "the world's first comprehensive warning concerning the human propensity to degrade natural systems" (Hall, 6). Whereas popular beliefs about nature up until Marsh's publication maintained

⁴⁶ To view SER's "Restoration Project Showcase," visit < <http://ser.org/restorations/restorations-list-view> >.

that nature's destructive forces were chiefly responsible for environmental degradation, Marsh placed responsibility on humans for degrading the earth (7).

Yet Marsh not only criticized humans' destructive activities—a sentiment that would galvanize U.S. environmental movements for decades to come—he also placed humans at the center of responsibility for carrying out restoration (Hall, 7). Hall argues,

As he emphasizes in the very first sentence of this book, one of his goals was “to suggest the possibility and the importance of the restoration of disturbed harmonies.” He elaborates that man must become a “co-worker with nature in the reconstruction of the damaged fabric which the negligence or the wantonness of former lodgers has rendered unattainable.” [...] Seeing degradation in these natural systems, he felt that the wisest response was to begin making reparations. One of his most novel assumptions was that nature by itself could not adequately repair damage caused by humans. (6-7)

Marsh influenced some of the earliest experimenters with restoration in the U.S. Professor Arthur Sampson at Berkeley began teaching students about forest restoration in the 1920s, at about the same time that Edith Roberts and her student Margaret Shaw at Vassar College initiated a native species-planting project on campus, each with the goal of reestablishing pre-European settler conditions (Allison, 31). Still, it is U.S. conservationist Aldo Leopold (1887-1948) who is usually credited with initiating contemporary restoration at the University of Wisconsin Madison's arboretum, for as Allison argues, his revered status in the environmental movement “lends a certain staying power to the story” (31). ““The time has come,”” Leopold argued, ““for science to busy itself with the earth itself. The first step is to reconstruct a sample of what we had to begin with”” (Bratton, 57). With the completion of the Civilian Conservation Corps and supervising ecologist Ted Sperry's first experimental restoration project in the 1930s,

which transformed a former horse pasture into the prairie it once was,⁴⁷ Leopold witnessed that first step being taken (Jordan & Lubick, 2). Leopold also witnessed the failure of attempts to restore the prairie utilizing non-ecological—or in this case, ahistorical—methods. The successful incorporation of historically and geographically-accurate phenomenon, like burning, and native plant species of surrounding prairies in Douglas County, influenced him to develop an ethic for land management that considered *all* members of an ecosystem. His radical “Land Ethic”⁴⁸ envisioned humans as just one member of a vast and complex ecological community, to whom humans were responsible for recognizing and protecting. This model continues to influence contemporary restoration, which differs from land management predating Leopold via its concern for biotic diversity over utility (Bratton, 57). Still, a preservationist ideology, wherein humans were largely precluded from what was considered “nonhuman space” influenced restoration, as the 1963 *Leopold Report* demonstrates. In its recommendations to the National Park Service, Aldo Leopold’s son, A. Starker Leopold, advises that each park be restored to the “biotic associations [and] conditions that prevailed when the area was first visited by the white man” (Anderson, 335), for “a national park should represent a vignette of a primitive America” (Hall, 185). A year later, U.S. Congress agreed when asserting that protecting nature meant setting it aside in nature preserves and keeping it “untrammelled by man” (Hettinger, 27). Though it is important to note that “biotic

⁴⁷ For more on the prairie, named after John T. Curtis, and its history, visit UW Madison botany’s site: http://botany.wisc.edu/zedler/images/Leaflet_16.pdf

⁴⁸ In a series of essays compiled in *A Sand County Almanac* (1949), Leopold developed his “land ethic”: “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.” According to Jordan, Leopold’s work has had enormous and lasting influence: “it inform[s] the broad mainstream of environmentalism and provide[s] the philosophical basis for [environmental] policies and programs” (*Sunflower*, 31).

diversity” largely continued to preclude humans during this period, Aldo Leopold did open the door for much greater human involvement in what was theretofore considered by EuroAmericans entirely nonhuman space.

It was also at Madison’s Arboretum that UW Professors John Aber and William Jordan held the first international meeting on restoration in 1980. Whereas in the 1970s, Jordan argues the field was universally ignored by environmentalists, considered “a distraction from the serious work of preservation” (*Sunflower*, 2),⁴⁹ the science and practice of ecological restoration gained increasing legitimacy after this symposium. It also inspired the formation of at least three cornerstones of the field: The Society for Ecological Restoration (SER) (est. 1988), which via publications and policy consulting “promote[s] ecological restoration as a means of sustaining the diversity of life on Earth and re-establishing an ecologically healthy relationship between nature and culture” (Society); the journal *Ecological Restoration* (est. 1981), which serves as an interdisciplinary forum for people to discuss all aspects of the field (*Ecological*); and the journal *Restoration Ecology* (est. 1993), which is published on behalf of SER, and takes up discussions of case studies and scientific analyses.

While the scientific field of restoration ecology is only about thirty years old, the practice of restoring environments has a long and varied history that extends much

⁴⁹ Jordan argues, “Despite this history, there remains an overwhelming fact of neglect. Environmentalism is, of course, a wide and diverse movement, if indeed it may be called a coherent movement at all. And yet we may say that, at least until very recently, the various schools of environmental thought have to a considerable extent been united in their neglect of restoration, their skepticism about its value, and their wariness of its political implications. [...] At bottom, perhaps...is an assumption of a deep metaphysical distinction between nature and culture” (Jordan, “Restoration, Community, and Wilderness” (24-25, 31).

further than EuroAmerican conservationism and preservationism.⁵⁰ That restoration has a past may come as a surprise, given the relatively recent history of profound environmental destruction. Yet indigenous cultures around the world have practiced sophisticated forms of land management and permaculture for thousands of years, which testifies, perhaps, not so much to the historical need for ecological repair, but to the long history of human intervention in the environment. In fact, most practices used by restoration ecologists today were employed by indigenous peoples long ago: low-intensity burns, tilling, weeding, sewing, controlling for pests, and creating distinct spaces for gardens are echoed in contemporary restorative practices (Toensmeier). Many of these human interventions were so seamlessly entwined with the land as to go undocumented in the annals of colonial history, a testament not only to settlers' lack of appreciation for Native American cultures, but also to the powerful wilderness ideologies that would continue to influence U.S. society and environmentalism for decades to come. But these ideologies, which refuse to acknowledge humans' place in nature, appear to be waning, as restoration's growing popularity may indicate, along with greater acknowledgement of humankind's rapidly expanding presence. Because of both of these

⁵⁰ In "Restoration, Community, and Wilderness," Jordan writes, "the notion of helping land recover from the effects of human use dates back at least to biblical times, in the fallowing of land. The active rehabilitation of ecosystems was a common theme of reforestation efforts in the Middle Ages, and of the practice of game management and forestry since the nineteenth century. The notion of recreating ecosystems for aesthetic purposes is grounded in traditions of landscape design that date back to the work of naturalistic landscape designers such as Capability Brown in England and Thomas Jefferson in the United States, and reached a high level of both achievement and self-awareness in the work of designers like Frederick Law Olmsted and Jens Jensen during the decades leading up to and into the twentieth century. Beyond this, the practice of restoration in the fully modern sense—that is, the deliberate and active recreation or restoration of historic landscapes or ecosystems defined in terms of the science of ecology—dates back at least to the pioneering work of Edith Roberts at Vassar College during the 1920s and the landmark work at the University of Wisconsin-Madison Arboretum, which began a decade later" (23).

developments, Hall's 2005 prediction, "we can expect American restorationists to begin inserting more culture into [eco]systems" (240) is proving quite true.

Synthetic Ecology and Material Feminist Natures

I believe Hall's statement serves as an instructive launching point for the major arguments in this chapter, both from a theoretical and practical perspective, and I therefore employ it to segue into a discussion of restoration's potential alliance with a material feminist politics of nature. Because restoration holds to the belief that nonhuman nature can be *created*, precisely *through* the active interventions of human beings, restoration theory and practice can challenge the pessimistic, mainstream U.S. environmental tenet that nonhuman nature—an arena supposedly distinct from human society—can only be saved via "hands-off" preservation.⁵¹ In contrast, ecological restoration stands as a mechanism for a "hands-on" preservation, acknowledging the human-nonhuman interplay of every biotic system, at least to a degree that distinguishes it among most other traditional environmentalisms.

Numerous material feminists concur with this viewpoint: Donna Haraway refers to human-nonhuman relationships theoretically as the "material-semiotic"⁵² and "naturecultures,"⁵³ both of which describe our reality as simultaneously discursive and materially produced, constructed as much by the physical forces of nature as the socio-

⁵¹ Jordan makes a similar argument throughout *The Sunflower Forest: Ecological Restoration and the New Communion with Nature* (2003), which he recognizes as a "friendly critique" of U.S. environmentalism's "inability to provide the basis for a satisfactory relationship between culture and nature.... In [Jordan's] view... the restoration movement offers a way to correct this weakness" (8).

⁵² Developed throughout *Modest_Witness* (1997).

⁵³ Developed throughout *When Species Meet* (2008).

political forces of culture. Her theoretical subjects—the cyborg or companion species—aim to illustrate the “leaky distinctions” between machine, human, and nonhuman, due to humankind’s historical co-dependencies with other humans, technologies, primates, and dogs, for example, or the symbiotic, cybernetic relationships we experience with every *body* around us and within us. Karen Barad describes the conjoined nature of matter and discourse via “intra-activity” (122), in a similar fashion as Nancy Tuana, who employs “interactionism” to do justice to the complex interactions between realist and constructionist ontologies that reveal their inability to be parsed (190-192). Stacy Alaimo envisions “trans-corporeality”—“the material interchanges between bodies” (*Bodily Natures*, 16)—as indicative that “the human is always intermeshed with the more-than-human world” (2).

In the spirit of these feminist scholars, Jordan purposefully uses the term “synthetic ecology” interchangeably with restoration to signal the human-nonhuman synthesis required of restorative activity, as well as the artifactual nature of co-creating environments in partnership with nonhuman actors. As Jordan acknowledges, each restoration attempt, including those “defective” or failed, reveals opportunities for understanding and appreciation that are only made possible *via* human participation (*Sunflower*, 19). At the same time, restoration avoids human domination because it “learn[s] ‘from the landscape itself,’ an assumption that the landscape has its own agency and projects” (Allison, 10). Restorationists therefore respect the species that are not beneficial or desirable to humans and “allow the environment to develop along pathways that are not controlled by humans” (10). This implies a rather radical prospect within

environmentalism on at least two counts: as material feminists like Haraway and environmental justice advocates argue (Di Chiro, 301), it acknowledges the fact that for thousands of years, nature has been a co-construction between humans and nonhumans. Indeed, the “wilderness” that European Americans encountered was always already the sort of “natureculture” material feminists theorize.

Further, whereas “generations [of] environmentalists have assumed that the loss or degradation of areas generally described as ‘natural’ is an irreversible process—that we can only subtract from or degrade the natural landscape, never add to or improve it” (Jordan, “Restoration,” 31), “synthetic ecology” recognizes that human manipulations of their environments are integral, unavoidable, variably beneficial, and indeed, *natural* within a co-evolutionary understanding of history (*Sunflower*, 19). Learning to appreciate humankind’s integration in the land, as restorationists do, releases humans from the exclusive confines of culture, as well as their role as inevitable polluter. I find this aspect of ecological restoration ideologically positioned to align with a material feminist and feminist environmental justice politics of nature, which has several potentially positive consequences for shaping justice-oriented restoration endeavors.

Both material feminists and restorationists argue that preservation and conservation—while necessary in some circumstances—will never sufficiently address the magnitude and depth of environmental destruction,⁵⁴ and there are at least two reasons for this. First, because preservation and conservationism overlook the potential

⁵⁴ Feminist environmental justice scholar Giovanna Di Chiro agrees: “mainstream environmentalists’ invention of a universal division between humans and nature is deceptive, theoretically incoherent, and strategically ineffective in its political aim to promote widespread environmental awareness” (“Nature,” 301).

for human involvement in transforming nature, these strategies, as Jordan argues, provide a “weak base for the development of the performance and ritual that will be needed to explore and articulate the terms of our relationship with particular landscapes, to create values related to these relationships, and to generate emotional commitment to them” (“Restoration,” 32). In other words, the survival of the nonhuman (and by extension, human) world depends upon a hands-on and integrated approach to stewarding it, not only because the planet requires ongoing stewardship, but also because actively tending to nonhuman creatures and spaces can solidify the kind of affective relationship among people that grounds a sustainable ethic of care. Material feminist Ladelle McWhorter recounts awakening to this profound ethic of interaction, which grounded her moral obligation to the earth in *Bodies and Pleasures* (1999): in stewarding the soils that made possible the conditions for her garden tomatoes to grow, she “could feel [herself] coalescing, becoming a part of a network of endeavor, spreading out, putting down roots. A world was opening to [her], and [she] was starting to belong” (164). Unable to definitively distinguish her own body from the soil she was nurturing, she narrates the process of “becoming-dirt”: “Dirt and flesh. Suddenly, it occurred to me that, for all their differences, these two things I was looking at were cousins—not close cousins, but cousins, several deviations now removed” (167).

Second, as material feminists, indigenous activists, environmental justice advocates, and certain restorationists recognize, any brand of environmentalism that perpetuates nature-culture distinctions and hierarchies also contributes to the materialization of institutional and systemic oppression. If what counts as “society” is

circumscribed to urban, people-populated locales, “nature” can remain “out there”: out of sight, out of mind. And if what counts as “environment” is limited to nonhuman wilderness, environmentalists and ecologists (and politicians, health advocates, educators, etc.) need show little concern for environmentally-related human problems, especially those emerging in urban locales, regardless of whether those problems arise from a degraded environment. In consequence, environmental devastation has spiraled out of control, both in areas coded as “wilderness”—because they are without a strong enough constituency of advocates—and in spaces coded as “urban”—because so few recognize urban space as “real” environment, food source, recreation, and worthy habitat. These interrelated problems of nature and culture are precisely what environmental justice and its contemporary offshoots—food and climate justice—bring together.

As restoration advocates ongoing, contextualized human stewardship and appreciation for complex, nuanced ecological relationships, material feminists understand that we need to nurture ideologies that foster interdependency “all the way down”—to borrow a Harawayan phrase (*When*, 164). Though restoration as a whole has yet to demonstrate sustained concern with the social injustices that result from nature-culture dualisms, restoration’s appreciation for direct human involvement in stewarding environments opens a pathway toward perspectives that can tell us as much about *using* nature as *not* using it, about *optimizing* human impact on environments, rather than exclusively *minimizing* impact.

Restoration’s Contradictions: Productive Sites of Slippage

Actualizing this optimization hinges upon ecological restorationist's ability to clarify the field's inconsistencies, directing it toward a material feminist and feminist environmental justice politics of nature. To begin, Jordan's assertion that the ideal restoration project attempts to replace *every* aspect of a lost or degraded ecosystem—not simply the overstory trees in an urban boulevard or the marshy hedges along an island, for example—must be evaluated (*Sunflower*, 12). As Jordan and many other restoration ecologists argue, there is a difference between “restoration” and “restorative.”

Reclamation, rehabilitation, revegetation, and recovery do not equal restoration: “What is distinctive about restoration is the commitment it implies to bringing the whole system back to a former condition whatever that might happen to be—not just those features we find beautiful, interesting, or useful but also those that we consider uninteresting, useless, ugly, repulsive, or even dangerous” (22). This is an important consideration, because restoration ecology is a science of complex systems and intimate relationships; neglecting large aspects of a site in need of repair, while cultivating select aspects for their utility or beauty, is more akin to conservation or gardening than restoration.

Yet I maintain that attempting to distinguish between “restoration” and “restorative” could prevent the kind of flexibility and community involvement that restoration will increasingly demand in the climate-changed future. Nothing is inherently problematic in restoring a site with the intentions of fostering a “whole systems” ecology, if doing so encourages a thoroughgoing attempt at restoring a great complexity and diversity of species and relationships. Yet as environmental scholar Colette Palamar points out, our information as scientists will always be partial and incomplete (take for

example the “millions of species that have not yet been catalogued or named,” let alone the processes and relationships that enable those species to function); therefore no restoration could ever completely restore a past ecosystem (290). This point alone underscores the slippage between “restoration” and “restorative,” and the fluidity that exists between them.

Furthermore, so long as a single interpretation of “former condition” is avoided, and so long as “former condition” implies “state of function” rather than a replica of a single moment in a site’s constantly evolving ecological history, then restoration can avoid hearkening to a mythological original nature, and invite a plurality of interpretations of what an environment could embody. As scholars Hull and Robertson observe, ecologies are unbounded, “transitory assemblages of biotic and abiotic elements that exist (or could exist) contingent upon...the theoretical perspective one applies to define the boundaries” (106). What counts as restoration then—how a site should function and for whom, and which actors do/not belong—*could* depend upon a plurality of interpretations within ecological limits. But if restorationists limit their energies exclusively to places they think can be completely restored to an (arbitrary) past replica, rather than places that could be restored, if ever-partially, to a present state of healthy function, they will miss crucial opportunities to make much-needed interventions in places unable to be restored historically, as well as collaborators who may be interested in making a site for alternative purposes in addition to traditional habitat.

Similarly, according to Jordan, the aim of most traditional restoration efforts is to erase the restorationist’s mark on the landscape (*Sunflower*, 12). If restoration only

accepts human interaction with the land insofar as they stealthily “repair” it and hastily exit the premises with intentions to never return again, then the extent to which restoration can faithfully stand apart from preservation seems dubious at best. This is certainly not what material feminists have in mind when they envision nature-culture interactionism. More troubling is the assumption such a tenet perpetuates about humankind’s supposed inevitably destructive impact on the environment, which justifies an ethic to keep green spaces unpeopled and uncultured.

This attitude, of course, belies history: indigenous restorationists have been combating the inaccurate and unfair depiction of a wilderness supposedly unmanaged by humans at least since the 1995 Society for Ecological Restoration International meeting, when The Indigenous Peoples’ Restoration Network (IPRN) was formed.⁵⁵ Evidence gathered over the past two decades suggests that contrary to popular anthropological, ethnobotanical, and ecological beliefs that Native Americans manipulated only natures on or surrounding village sites for food and not the “pristine wildernesses” that supposedly lay beyond, land manipulation was actually practiced in a variety of ecosystems. Indigenous practices of burning, tilling, and breeding, for example, “produced cumulative and possibly permanent effects in plant associations, species distributions and composition, and, perhaps, gene pools and genetic structures of the species and plant assemblages” (Anderson, 335). M. Kat Anderson, who has researched the restorative practices of Native Californians argues such activity is properly labeled “anthropogenic,” meaning shaped by human activity and not self-sustaining in its absence (335). I argue

⁵⁵ The IPRN’s goals are to enhance survival of indigenous peoples and incorporate knowledge of these cultures into ecosystem management models (Anderson, 337).

that it is counterproductive, then, for contemporary restorationists to mask their efforts; so long as sites are nurtured and tended with the intention of assisting multiple and diverse inhabitants—human and nonhuman—leaving evidence of human participation and stewardship, in whatever form deemed appropriate by the affected community, could enhance that community’s sense of responsibility for green spaces and appreciation for human-nonhuman interdependency and coevolution.

Finally, controversy among restorationists over whether or not restoration should be considered “creative” work indicates a similar discomfort with human presence in “nonhuman” space, and therefore an inability to imagine interactionist naturecultures.⁵⁶ Herein lies another place where distinctions become blurred, this time between imitation (positively coded as “natural”) and art (negatively coded as “artificial”). Yet even at the most practical level, it is impossible to ignore the creative—imaginative, resourceful, subjective—input of restorationists. As my discussions with Twin Cities restoration ecologist Carolynn Carr⁵⁷ reveal (Carr interview, 9/1/11), restoration entails quite a bit of creativity, if only because restorationists constantly have to make interpretive decisions that, within the constraints of the landscape and its history, still demand quite a bit of subjectivity. Numerous considerations illustrate this: will a rainy weather work party ruin an eroded slope, in which case volunteers should concentrate their efforts in another place at the site? How might volunteers’ physical and mental abilities affect which

⁵⁶ Jordan observes that while “Most of the restorationists [he knows]...insist[] that restoration is creative work,” “Ecological restoration...aims to be...explicitly *noncreative* with respect to objectives, neither improving on nature nor improvising on it but attempting, blankly, to copy it” (*Sunflower*, 24).

⁵⁷ Carolyn Carr, M.S. is a Minneapolis-St. Paul based conservation biologist and urban restoration ecologist who co-runs Ecological Strategies, an organization that conducts natural resource planning, management, restoration, and education. For over a decade, she has closely advised the St. Paul nonprofit Friends of the Mississippi River’s restoration work in the Mississippi River Gorge, which is how she and I first met.

species are weeded or planted and where? How should funding be allocated—to support a few costly species or numerous inexpensive species? Should a site be tended chiefly to curb an invasive species, or to nurture an endangered species? Should colorful plants ever be placed strategically for aesthetic purposes in order to engender greater appreciation for a locale? Should thorny shrubs be placed nearer their companion species, or along a trail to discourage off-trail use? The experiences, preferences, imaginations, and limitations of restorationists most certainly influence not only the future vision for a site, but the implementation of methodologies as well, which often depart from the original design given a variety of unforeseen factors that arise in the process of restoring. Because answers to these kinds of questions are usually made for the ecological benefit of a site rather than, for example, aesthetic beautification, they are “noncreative” in a sense. Yet to the extent that a variety of similarly beneficial decisions could alternately (though just as “ecologically” and “accurately”) be made on a site, *and* because restoration will necessarily involve limitations and constraints, restoration has arguably *always been* a “creative” endeavor.

From a material feminist point of view, failing to appreciate creativity in material or nonhuman worlds reveals the limits of anthropocentrism. For there are all kinds of ways that material objects, inanimate natural phenomena, and nonhuman animals escape capture and intelligibility, elude predictability, or create tools, relationships, forms of play, and homes that humans will never finally understand. Even matter often considered “inanimate,” as McWhorter’s narrative on soil attests, is shown to act, aggregate, perpetuate itself (as well as other living things), often in unpredictable becomings,

expressions, and unfoldings (162-167). Alaimo theorizes how the material world “kicks back”—to borrow Barad’s term (“Meeting,” 188)—by explaining how agency is an enactment not necessarily dependent upon a subject (“Trans-Corporeal,” 244-50). This concept is only possible if “things” are not conceptualized as preceding their “relations” (248), which drives to the very heart of the nature-culture, human-nonhuman “intra-activities” material feminisms put forth. As Barad argues, reality is not composed of things, but of “things-in-phenomena” “intra-acting” (“Posthumanist,” 135). Releasing agency—and the creative spirit exclusively relegated to human artistry—from the confines of the human opens an appreciation for the ways nonhumans, landscapes, environments, etc. “express” themselves, “invent” habitats and relationships, and inspire human imagination. With regard to restoration, then, seeing creativity in landscapes means appreciating nonhumans as lively actors fully involved in (co)shaping their destinies, and “tak[ing] seriously the voice of the land” in making decisions (Palamar, 296). To relegate creativity only to humankind—or to claim it plays no role in shaping environments—risks a factual unsoundness that also clouds our ability to appreciate the ways nonhuman nature acts as a surprising, confounding, inspiring “trickster with whom we must learn to converse,” as Haraway famously writes in “Situated Knowledges” (*Simians*, 201).

These three tensions first elaborated by Jordan—restoration vs. restorative, urban vs. nature/wilderness, and creative vs. duplicative—gesture toward contradictions at the heart of restoration’s identity. And yet, the potential is there for valued, yet ever-partial, restoration projects to continue benefitting degraded environments by restoring healthy

system-functioning; by promoting humankind's transparent, evident, and celebrated transformation of nonhuman nature; and by attending resourcefully, care-fully, to creative enterprises with landscapes respected as co-creators in their destinies. These productive sites of slippage and the potential for new kinds of restoration projects are already extant in restoration's various unresolved tensions; they just need to be teased apart, clarified, and underscored in material feminist critique.

The Anti-Invasive Movement

In general, conventional restorationists have failed to recognize the field's potentially beneficial impact on underserved human communities in addition to the nonhuman communities they undoubtedly assist. This is because today in the U.S. ecological restoration remains a practice that mostly services established parks, prairies, forests, and wetlands—places often spatially and philosophically divorced from the urban or rural neighborhoods whose residents could benefit from non-toxic, safe, and biodiverse green space (Allison, 215). While every ecologically vulnerable locale deserves restorative attention, by focusing almost exclusively on places coded as “nonhuman,” restoration aligns itself with an elite preservationism, and misses crucial opportunities to combat social inequities, confront the biosocial causes of polluted landscapes, damaged food systems, and global climate change,⁵⁸ *while* creating resilient habitat for nonhuman species.

⁵⁸ I recognize that most traditional ecological restoration projects do help to mitigate climate change by ensuring that more healthy green spaces exist and can be sustained. Yet as I demonstrate in this chapter and Chapter Four, the kind of change necessary to impact climate change in any major way will also have to involve a more radical, *biosocial* approach to environmentalism.

In addition to these aspects of ecological restoration, which understandably make the field seem at best unconcerned with social issues and at worst impenetrable to “outsiders,” many have critiqued the nativist rhetoric that seems to permeate its discourse. Restoration has even created a backlash, according to naturalist David Williams (164), with critics maintaining that the field “promotes a xenophobic, nativist argument, akin to that practiced by the Nazis” (164).⁹ For example, common rhetoric to describe invasive plants and animals include “weeds” (Crosby, 145; Polk, 180), “the ‘tramps’ of our flora” (149), “exotic” (Williams, 156), “uncontrollable” (158), “cancerous” (158), “aggressive” (161), “impenetrable” (161), “monsters,” “demons” (Pollan, A52), “alien threat[s],” “creepy strangler[s],” “wild immigrants,” “pathogens of globalization,” “biological invaders” (Subramaniam, 137), “fugitives,” and “undesireables” (Cresswell, 335-6). Clearly demonstrating their moral valence, metaphors of invasion and war are frequently employed to contend with invasives: “Cut down the scum, spray them with killer herbicide”; “If we don't fight back, they'll take over!”; and “join forces to defeat the evil alien” (Schroeder, 252).⁵⁹ In light of these characterizations, it is apparent that dangerous parallels may exist between the mentality restoration promotes and proponents of racial, class, and sexual purity.

⁹ Michael Pollan's article “Against Nativism” traces the development of pre-World War II Germany's “blood and soil” native gardening movement, which was “founded on nationalistic and racist ideals” (A52). Germans were encouraged to plant their gardens along the lines of “Nordic” species standards and “exterminate” nonnative species, while closing off Germany's borders to “unwholesome alien [plant] influences” (A52).

⁵⁹ Schroeder does discuss the motivational effect metaphors of war may have on volunteers: “this metaphorical likening of restoration work to war has the positive effect of reinforcing the volunteers' commitment, dedication, and willingness to sacrifice for their cause” (262). Yet “Unfortunately,” he writes, “this martial view of restoration work may...intensif[y]...controversy and [make] it more difficult to resolve. [...] The immediate impulse [is] to fight and try to defeat...enemies, rather than to try to understand their objections and look for ways to negotiate and compromise” (262).

Feminist science studies scholar Banu Subramaniam concurs in her research that demonstrates how “the recent hyperbole about alien species is...in response to changing racial, economic, and gender norms in the country” (136). She finds several discursive parallels between immigrants and nonnative species: both raise the specter that aliens are everywhere, taking over, silently growing in strength and number, reproducing rapidly, parasitically consuming resources faster than they can be replenished, and causing undue economic hardship on the host country.⁶⁰ “The xenophobic rhetoric,” she writes, “is unmistakable” (142).

From a historical perspective, the irony of such xenophobia lies in the United States’ biocolonial roots: in just a few hundred years, European Caucasians became the predominant human inhabitants of most of the regions they colonized (Lahar, 101). Named “The Demographic Takeover” in *Ecological Imperialism: The Biological Expansion of Europe* by historian Alfred W. Crosby, the massive transcontinental migrations of the colonial era could not have been accomplished by humans alone (107). Instead, as Stephanie Lahar writes, “the human victims, the aborigines of the Lands of the Demographic Takeover...knew they were only one of many species being displaced and replaced” (107). In fact, colonial plants, animals, and pathogens advanced as fast or faster than European explorers and settlers (151). Colonialism was (as neocolonialism continues to be) a thoroughly biocultural phenomenon, as nonnative and invasive species

⁶⁰ In a similar rhetoric study, queer ecofeminist philosopher Danne Polk chronicles how queer bodies became conceived as “invasive threat”—and thus disposable weeds, or “faggots”—to the patriarchal imaginary, contaminating “an otherwise pure symbolic system or natural order” (80). And geographer Tim Cresswell similarly explores the use of invasives for their metaphorical power in legal policy-making, which justifies the practice of “weeding” “out of place” residents—drug users, criminals, gang members—from targeted neighborhoods, which are then “reseeded” with prevention programs and increased surveillance (335).

associated with the colonists, in addition to development and intensive forms of European agriculture and forestry, transformed environments and cultures across the globe (104-107). Herein lies the necessity of contemporary restoration efforts, where in light of history, nativism—and the xenophobic, heterosexist, elitist rhetoric it can inspire—is an ironic phenomenon.

In order to combat nativism, “multihorticulturalists” point out the ways in which “foreign” species of nonhumans color and diversify our lives (Pollan, A52). Some, like Crosby, even contend that “opportunistic invaders” of plants, for example, have certain benefits, such as serving as “the Red Cross” of the plant world (169). Without the invasive plants of colonialism, he contends, the loss of topsoil due to development, farming, and industrialization would have impoverished thousands of hectares of the most valuable agricultural land in the world today” (154). Some of these colonial invaders even form the foundation of the U.S.’ agricultural system; nearly all U.S. crops are nonnative while the insects that threaten them are native species (Subramaniam, 143). These points highlight the ways in which broad generalizations of nonnative and invasive nonhumans “obscure the heterogeneity of the life histories, ecologies, and contributions of native and exotic plants,” as Subramaniam argues (143), while fueling misguided applications to human difference and integration.

While all of these are valid points and could go a long way toward improving restoration’s image and practice, special care must be taken to hold them in tandem with certain realities of our globalized world, such as the severity of current losses of biodiversity, which could, in some cases, be slowed or prevented if certain ecological

boundaries were upheld. For example, Crosby errs in generalizing about how invasive plants save soils and ecosystems from the ravages of disturbance (169). He writes, “when the emergencies are over, [invasives] give way to plants that may grow more slowly but grow taller and sturdier” (169). While it would be nice if invasives merely held place in line for the fruition of native species or became the next generation of an ecology’s benign native species, in most cases, “when they have an impact,” writes Allison, “the impact is negative” (100). The chief problem of certain invasives is that they cause mass-extinctions of native species, resulting in *homogenous* landscapes—a point that some critics of restoration ironically fail to understand (Williams, 166). As Williams writes, “if the proliferation of invasives continues, we could well end up with a world dominated more and more by a handful of very successful, very common species” (166).

Though critics correctly observe that migration and some disturbance is natural—indeed, even Native Americans and indigenous cultures around the world engaged in the transplantation of species, sometimes over great distances (Toensmeir), environments evolve, and species respond and adapt, they ignore contemporary *rates* of those changes. For example, Williams writes, “how...do we contend with someplace like Hawaii, where the rate of introduction has changed from its historic pace, an estimated one plant per 100,000 years, to the modern 22 per year? With just .02 percent of the U.S. landmass, Hawaii is home to 75 percent of the historically documented plant and bird species extinctions in the United States” (165). Today, as the world’s species transgress oceans and national borders on a daily basis, we must be concerned about how they will respond

to their new environments without former barriers and evolutionary checks (165).

Indeed, it is this sort of vigilance and awareness that is necessary for being responsible members of our ecological communities.

In this sense, many restorationists argue that the anti-invasives movement is not—or at least *should* not be—about colonial, racial, or heteronormative purity (Williams, 165). I agree with Williams when he writes that restoration is not about “native versus nonnative—and closing our land and water to all foreign influences. It’s about recognizing that some introduced plants and animals have the potential to damage...ecosystems, and it’s about trying to determine which those are before they invade” (165). This is a lesson of pluralism, which, according to Palamar, “reminds us to include diversity, but avoid the trap of the melting pot where the variety of views is eclipsed by...uniformity” (299). In this vein, many ecologists recognize that some nonnatives do cohabitate in their new homes, and that part of what makes our landscapes unique and interesting involves the presence of diverse human, animal, and plant communities, whether native or nonnative. Removing certain species, then, becomes more about opening possibilities for a variety of other species and relationships to flourish, rather than because they fall outside culturally imposed categories of belonging.

Certainly, it can be difficult to parse how much problematic rhetoric can be attributed to popular media and sensationalized news headlines versus restorationists themselves. Yet whether restoration is unfairly interpolated or rightly critiqued, one of its major challenges will be how to simultaneously address the urgent and growing dilemma of the development, pollution, and globalization that set the stage for ecological

degradation, while capitalizing on the field's rather unique environmentalism. This task will leave no room for appeals to racial or sexual purity, the racial, class, or sex/gendered exclusivity of its leadership and constituency, nor the incorporation of preservationist human-nonhuman binaries.

The “Return” of Restoration

I maintain that restoration's success may actually be found in yet another of its pressing challenges, but only if the field embraces its contradictions and crises as opportunities. As if restoration's problems—its contradictory nature politics, tendencies toward misguided ideological leanings, exclusivity, and xenophobia—were not sufficient enough to prevent its efficacy and widespread appeal, climate change is leveling a great threat on the ecological front. Whereas restoration has always relied upon historical precedent to return a degraded landscape to its previously functioning condition, climate change is preventing such a “return,” spurring some restorationists to question if climate change implies “the death of restoration” (Light, 107).

Though the climate has always been changing, and ecologies have always responded via adaptation, the magnitude and rate of contemporary, anthropogenically-induced climate change is unprecedented. Today's accelerated climate change beckons grave concerns that human societies, nonhuman species, and ecological systems will not be able to meet adaptation demands quickly enough; “failure to do so,” writes philosopher Ronald Sandler, “will have high social, economic, and biological costs” (64). A major aspect of these concerns, especially for restorationists, is that as global warming

accelerates rates of change, information deficits and uncertainties about the ecological future are also exacerbated (63). The earth's people may well know what is *causing* climate change, but its long-term effects are difficult to quantify.

Much to the dismay of restoration ecologists, the unprecedented boundary shifting endemic to climate change has incited fear that restoration will become increasingly irrelevant (Simpson, 343; Ingram, 235; Harris et. al, 171; Simpson, 343). Ecological relationships that took millennia to evolve are rapidly disappearing. Historical templates, “critical for informing restorationists of past conditions” (Hall, 4), are thus progressively proving either difficult to ascertain, or irrelevant to current conditions. For example, entire ecosystems may need to be shifted north by one hundred and sixty kilometers—or further—in order to resume behaving as they once did.⁶¹ Park and agriculture boundaries may need to be redrawn with the intention of expanding North-South corridors to accommodate species' responses to temperature shifts. Phenology reports already confirm that an average of forty-one percent of documented species exhibited changes consistent with climate change: pollinator flight activity and spring flowering, for example, are occurring four days earlier per 1°C increase in temperature (Allison, 79-80).⁶² Keystone species may become extinct, threatening to collapse entire ecosystems.⁶³ The rapid introduction of nonnative and invasive species—a consequence of both globalization and climate change—may prove impossible to eradicate or control, thus

⁶¹ As Allison documents, “Every 1°C change in temperature causes ecological climate zones to shift by 160km (in the northern hemisphere moving north with temperature increases) or to change in altitude by 160m (moving up in altitude as temperature increases). There is already strong data demonstrating changes in species distributions around the world” (78).

⁶² This statistic was drawn from a study of 1,598 species with good long-term records of phenology (Allison, 79-80).

⁶³ Of course, ecosystems can also collapse with the decline of non-keystone, supportive species, such as amphibians, thirty-two percent of whom are threatened with extinction around the globe (Allison, 80).

requiring new strategies of mitigation and integration.⁶⁴ Energy and food resources depleted in one locale may need to be harvested for the first time in other locales. The global demand for carbon sinks may invigorate forestry protection and preservation in certain areas of the globe, yet displace the families and industries who have relied upon, and sustained, those forests for centuries. And as Sandler reminds us, the ecological impacts of global warming will be geographically differential—greater in some places than in others—and not necessarily predictable (72).

To varying extents, all these possibilities have already become realities. Supporting Bill McKibben’s claim that we now exist on planet “Eaarth” (2), there is evidence showing climate change has affected all taxonomic groups (Allison, 80), and virtually all ecosystems have been impacted, most of which now exist in conditions that are beyond their historical range of variation (91). According to Allison, “These changes have created a situation in which most are hybrid⁶⁵ or novel⁶⁶ ecosystems or will soon become hybrid or novel ecosystems” (91). Therefore, in general, HRV and native/non-native are going to be “increasingly poor proxies” for assessing ecological integrity (Sandler, 72). In fact, using these proxies would arguably amount to ecological

⁶⁴ For example, non-native species now account for over half the plant species growing “wild” in New Zealand (Allison, 100). Eradication is no longer an ecologically sound approach to contending with this reality.

⁶⁵ Hybrid ecosystems are those that “have some of the characteristics of the current or historical ecosystem but which, due to changes in terms of species composition and function, now exist outside the HRV” (Allison, 100). I will discuss this type of ecosystem further in Chapter Four.

⁶⁶ Novel ecosystems (also termed “no-analogue” and “emerging”) are those that differ in composition and/or function from past systems primarily as a consequence of changing species distributions or environmental alteration through climate and land use change (Hobbs et. al., “Why,” 4). According to Starzomski, “They are a consequence of human activity but do not depend on human intervention for their maintenance. Novel ecosystems are also not practically reversible to the original state” (88-89). I will discuss this type of ecosystem further in Chapter Four.

insensitivity and human domination, as inappropriate templates are imposed upon ongoing ecological processes (72).

The fact that ecologists must now be thrust into the uncomfortable position of proceeding without the templates of history to guide their work makes the future of restoration risky, confusing, and even dangerous (Harris et al, 171). What is one to make of restoration in an age when remnants, memories, habits, and creatures of the past are fast becoming obsolete, when “place” in place-based environmentalism becomes continuously redefined? Without historical guidance, the most restorationists can rely upon are educated guesses; experimentation and trial and error will gradually become the standard. Greater opportunity exists than ever before for mistakes, unforeseen consequences, and deadly combinations. Much has already been lost as a result of climate change: species, shorelines, forests, cultures, reliable seasons, “weatherable” storms. Unfortunately, much will yet *be* lost before global actions significant enough in scale can mitigate climate change. Meanwhile, if restoration can salvage what is left of the natures we have held dear and recreate former ecological relationships as it has always done, it can still embody a worthwhile endeavor. But in light of our rapidly changing planet, restoration *could* embody a *transformative* endeavor if it creates “new natures”⁶⁷ addressing the unique, contextualized needs climate change introduces.

Indeed, restorationists have little choice but to accept the reality of these “new natures,”

⁶⁷ Throughout this project, I put quotation marks around the term “new natures” in order to signify my recognition that nature is never created entirely anew, but rather changes according to a variety of evolutionary and cultural impacts, integrating novel aspects while retaining historical aspects. And yet, the kind of shifting our generations experience today because of climate change occurs so rapidly that it warrants, in my opinion, the designation of “new.” “New natures,” therefore, references both the unprecedented ecological shifts brought about by climate change, as well as the green spaces humans—restorationists and environmental justice advocates alike—will need to create in response to those shifts.

and work toward building ecological communities that can withstand novel natural-cultural demands.

Restoration must revisit its role in “the return.” To *return* a site to a state of functioning implies hearkening to a past state; it suggests coming back after a period of absence. This is an ethical goal of restoration, i.e., interventions *should* take place where human encroachment has degraded an area, where human care and stewardship have been absent, but should now salvage, renew, and protect. It is also a practical, material goal of restoration to reinstate the plants, insects, drainage patterns, etc. that were once familiar to a site, for these will usually ensure a site’s longevity and resilience, “returning” an ecological community to a previous condition of stability, diversity, and resilience. The result is a site reminiscent of its former self, even if certain aspects have evolved over time. Restorationist Valentin Schaefer calls this the “ecological memory” of a place, “the species...and...processes that will determine the trajectory for the ecosystem in the future” (171). This kind of “remembering” is material; when a site is resilient—healthy enough to withstand the shock of disturbance or integrate novel species and relationships—it quite physically “remembers” what does and does not belong in its localized community, a “knowledge” that takes millennia to evolve and solidify. For restoration ecologists, historical models are employed and ecological precedent is sought, based precisely upon ecological memory. Yet climate change is undoing the potential for both restorationists and ecologies to “remember.”

Therefore, the “return” of a relevant, socially-savvy restoration, as great a departure from the time-worn restoration model as it may be, may involve a slight to

significant, purposeful, turn *away* from a site's ecological history in degree, and perhaps even in kind, depending on the gravity of climate change's contextualized interventions. However, if our natures are under such an extreme amount of stress because of climate change that time worn restoration models may no longer be appropriate, we could harness these novel situations toward novel naturalcultural creations, making a space perform for as many human and nonhuman stakeholders as possible. Ecologist Susan Bratton agrees when she writes, "Our attachment to the 'natural past' model of restoration may be causing us to miss good opportunities and to respond insufficiently to the ecosystem change and habitat fragmentation that is presently occurring worldwide" (66). If the chief goal of restoration truly remains to return a site to a *state of functioning* and not to a fabled origin as its ideology purports, then I argue we have some room to expand the notion of what a restored site might look like and accomplish, especially in light of the rapid change global warming has already induced. Despite the misfortune of climate change, we might find opportunity to ensure that the changes that do happen are desirable ones, if only restorationists took full advantage of the field's potential. If reconceived, perhaps restoration could be pushed toward novel, creative solutions wherein green spaces are crafted in order to address a multitude of needs and engage diverse human and nonhuman stakeholders.

Of what these "new natures" will consist will largely depend upon who is involved in determining their character. Restoration ecologists will continue to play a pivotal role, especially for their experience fostering functioning systems in challenging, depleted locales; for their resourcefulness in restoring amidst a variety of context-specific

limitations; for their knowledge in finding evidence of past ecological function and which species do/not enable each other to thrive.⁶⁸ But I maintain that their expertise must be put into conversation with the knowledge and needs of other local human stakeholders who depend upon a specific ecological community for recreation, livelihood, food, clean water, hunting, resource extraction, shelter, aesthetic appeal, carbon sinks, or protection from natural disasters. Because climate change disproportionately affects marginalized races, nationalities, genders, and classes of people, these “new natures” must be restored with the consent, participation, and design of those so affected. This is not only because local stakeholders are directly affected, but also because local stakeholders likely have place-based knowledge that outsiders lack.

While there appears to be ample discussion among restoration ecologists about the impact of climate change on the field and how to contend with it—as recent conversations in the leading journals of the field⁶⁹ and two path breaking publications⁷⁰ reveal—there is much less discussion about employing restoration toward the goals of environmental, food, or climate justice.⁷¹ It is clear that climate change is threatening

⁶⁸ Indeed, climate change may inspire new, as yet unseen, ways to value restoration and restoration ecologists.

⁶⁹ For example, *Ecological Restoration* devoted Volume 27, Number 3, to the topic of “Climate Change and Restoration” and *Restoration Ecology* has published several related articles, including “Ecological Restoration and Global Climate Change,” by Harris et. al. The collection of essays published in *Human Dimensions of Ecological Restoration* (2011) also devotes one of its chapters to the topic: “Climate Change Implications for Ecological Restoration Planning,” by Buckley & Niemi (177-187).

⁷⁰ Two recent, cutting-edge publications that take up thoughtful and thorough discussion of novel ecosystems amidst climate change include (1) Allison, Stuart. *Ecological Restoration and Environmental Change: Renewing Damaged Ecosystems*. New York, NY: Routledge, 2012; and (2) Hobbs, Richard J., Higgs, Eric S. and Hall, Carol M., eds. *Novel Ecosystems: Intervening in the New Ecological World Order*. Hoboken, NJ: Wiley Blackwell, 2013.

⁷¹ Quite a few restorationists argue for better communication between “experts” and “laypeople” regarding restoration projects, as well as taking into consideration “social and cultural goals” (Light, 107). But to the best of my knowledge, none have made explicit the possibility of shared goals between restoration and environmental justice. One possible exception that I am aware of is Palamar’s article “The Justice of

environments all over the world—and that restoration itself is a threatened field—but it is less clear that restorationists would be willing at this time to incorporate the non-ecologists, non-experts, and non-native species that would need to be considered if justice goals were thoroughly integrated. If attempted, this would challenge restorationists to consider the truly biosocial causes *and* consequences of climate change, and thus approach restorative goals from an integrative, coalitional perspective. This implies that the “new natures” restorationists attempt to create must serve many purposes, and many stakeholders, simultaneously. Indeed, I argue that this is the only way we can create truly sustainable natures in the era of climate change. Natures capable of sustaining, over many decades, the form and content of a site must be created contextually with the intentions of nourishing and protecting the humans and nonhumans who have a stake in that ecology, affected though it is by climate change.

Of course, moving forward with this approach prompts several questions: what gets left behind in this endeavor, and who will be satisfied with the trade-offs? This plan may force us, in certain circumstances, to abandon former goals and struggles, as well as the histories and species that have depended upon the stewardship of restorationists. If either climate change or the needs of a human community prevent certain species and processes from being reinstated as they would have been in the past, the end result could potentially look quite different from the restoration of yesterday. At what point will the demands of climate change force us to consider whether we are faithfully practicing “restoration,” which concerns itself with re-establishing biodiverse ecosystems, or

Ecological Restoration,” which characterizes restoration as a potential development the environmental health movement in U.S. history. Her thesis, though focusing on health ecology, is generally supportive of mine, in that she argues this partnership could reinvigorate today’s environmentalism.

something qualitatively different, like land management, which is primarily concerned with natural resource utility? Will “doing justice” for humans always (or sometimes, or never) take precedence over “doing justice” for nonhumans? That is, who will be satisfied if a justice-oriented restoration embodies “light” anthropocentrism? Further: though restoration itself would have to be radically revised, does a justice-oriented restoration suggest an abandonment of radical climate change policy in favor of reformist adaptation? In other words, does this plan help us invest our energies into a lofty and transformative enough endeavor to make significant headway against climate change?

It must be recognized that no site could integrate every species or meet every need of every resident—indeed, such an all-encompassing goal could certainly not be achieved even under traditional restoration endeavors—and thus, a justice-oriented restoration plan would have to be negotiated in ongoing contestations; the result could not please everyone, and special care would have to be taken to ensure that as many human and nonhuman stakeholders as possible are benefitted. But at the very least, this conception would be far more democratic, inclusive, and respectful than what counts as restoration today.

More urgently, in my estimation, it is one of the most realistic, practical, and hopeful ways forward as we struggle to meet the needs of a rapidly changing, rapidly degrading planet. Part of surviving, and even living *well* amidst climate change, will have to involve a degree of adaptation. We have no other choice. The transformative, *radical* aspect of a justice-oriented restoration lies in its ability to unite the wisdom and strengths of social justice advocates with environmental advocates and in so doing,

address a simultaneity of constituents and needs at once. Such a pairing could contribute powerfully to dramatically different, truly sustainable commons. This project therefore moves any discussion on climate change beyond the usual claims heard in the U.S.—“climate change is happening,” “it is anthropogenically caused,” and “adaptation and mitigation are urgently needed”—by asserting that the “new natures” being produced at unprecedented rates also present great opportunity for democracy, justice, and sustainability. If harnessed toward the goals of environmental justice, ecological restoration could provide one valuable approach to realizing this opportunity.

Chapter Four

Novel Natures and Nature's Publics

Introducing the Beacon Food Forest

Seven years ago, a few permaculture design students in Seattle, Washington had a radical idea: build a food forest⁷² on public land designed by neighborhood residents that would be free and open for public foraging. In so doing, they would accomplish several goals at once: create community, provide opportunities for education about food cultivation, combat food injustice in a food desert, curb climate change-inducing emissions from food transport by localizing the food supply, and rehabilitate their local ecosystem.⁷³ Five years later, Friends of the Beacon Food Forest (FBFF) are well on their way toward realizing this transformative vision.

Though it pushes the bounds of conventional restoration significantly, the Beacon Food Forest (BFF) model begins to provide a pragmatic materialization of a justice-oriented restoration project aimed at solving social and ecological dilemmas now and in the future. This chapter details the development of the U.S.'s largest forageable food space (Lupo; Schiller; Gellerman),⁷⁴ as well as the problems and potentialities of

⁷² Food forestry is a gardening or land management system that mimics a tiered forest ecosystem, but substitutes edible plants for nonedibles. The upper story typically consist of fruit and nut trees, the middle story includes small trees, berry shrubs, perennials, and annuals, the lower stories involve fruiting groundcovers, herbs, grasses, and fungi, with a rizosphere and root zone below that. According to the BFF website, "Companions or beneficial plants are included to attract insects for natural pest management while some plants are soil amenders providing nitrogen and mulch [this method of pairing companionable species together is called *agroecology*]. Together they create relationships to form a forest garden ecosystem able to produce high yields of food with less maintenance" (Beacon Food Forest).

⁷³ Or, according to the BFF mission statement, "Our goal is to design, plant and grow an edible urban forest garden that inspires our community to gather together, grow our own food and rehabilitate our local ecosystem" (Beacon Food Forest).

⁷⁴ To be clear, the BFF is the largest *forageable* food forest *on public lands* in the United States, according to Jenny Pell (Gellerman). There are large, 2,000 year old food forests in Vietnam (Tabafunda) and the

restoring resilient enough biosocial communities to contend with the “new natures”⁷⁵ climate change has initiated. With FBFF, I answer “can food be free, fresh, and easily accessible?” (Stone) in the affirmative, and explore how contextualized projects like the BFF can mount a significant enough confrontation to the vulnerabilities contributing to and caused by climate change to restore *ecological livability*.

In 2009, instructor Jenny Pell⁷⁶ of *Permaculture Now!* tasked her permaculture⁷⁷ design students, including Glenn Herlihy and Jacquelyn Cramer, the two founders of the Beacon Food Forest, with creating a final dream design project on an extant piece of land. Having lived in Beacon Hill, Herlihy was aware of a fourteen-acre vacant plot of

Middle East, so “food forests are not new,” says Pell (*Gellerman*). ““Where we’re stretching the bounds,”” according to Herlihy, is by ““creating a food forest that will also be a public gleaning area”” (Baskin).

⁷⁵ As Chapter Three explains, I use the term “new natures” to encapsulate the ways in which our naturecultures are—and will continue to be—different from the past due to unprecedented shifts caused by climate change. It does not imply that nature is ever fabricated entirely anew, as if cultural, historical, and material entities have discontinued their influence on present and future systems. Rather, “new natures” can be likened to the “novel ecosystems” to which recent scholarship in ecological restoration attests: as this chapter will detail, these systems differ in composition and function from past systems because conditions have so drastically changed due to land use change, habitat destruction, the arrival of nonnative species, climate change, or a combination of all four (Hobbs et. al., “Why,” 4; Allison, 99; Starzomski, 88-89). “New natures” therefore references both the unprecedented ecological shifts brought about by climate change, including the societal impacts of those shifts. Furthermore, I also employ the term to describe the green spaces humans—restorationists and feminist environmental justice advocates alike—will need to create in *response* to those shifts, in order to design the most desirable ecologies possible in the Anthropocene.

⁷⁶ Marisha Auerbach and Kelda Miller joined Jenny Pell in co-teaching the permaculture course, along with several prominent guest speakers from the local permaculture and raw vegan community. Classes were held at the Raw Vegan Source/New Earth Permaculture Farm in Redmond, at Seattle Tilth, the Home of the Good Shepherd, as well as other workshop locations in 2009 (*Wiki*).

⁷⁷ Permaculture is a whole systems approach to land management modeled after natural ecosystems, wherein system self-sustenance is the goal. To that end, the soils, plants, insects, and fungi (etc.) are purposefully gardened in order to be mutually beneficial and self-propagating (Leschin-Hoar). This means that over time, the need for human maintenance—weeding, watering, planting, etc.—will decline. But permaculture, for Pell, is much more than a gardening methodology: “it’s an ethical framework with a lot of principles that...[try] to get to sustainable, resilient human communities. And also embed the skills from the community—invite people back into that process, getting people back into learning skills” (*Gellerman*). Still, Herlihy adds, ““As much as we are promoting permaculture,’ ‘we have to allow other gardeners to freely express their ideas in their ways”” (*Mellinger*). To appease a diverse neighborhood of stakeholders, the BFF also includes “more familiar urban farming features alongside the food forest: community garden plots, collectively managed plots, orchards, and edible arboretums, as well as a new concept Friends of the Food Forest are calling a ‘Tree-Patch’—much like a standard garden plot, but with a tree” (*ibid*).

land adjacent to Jefferson Park, owned by Seattle Public Utilities (SPU). Jefferson Park is a forty five-acre green space two and a half miles from downtown Seattle, and home to soccer and baseball fields, tennis courts, lawn bowling, a kids' summer water spray park, golf course, skate park, playground, and recreation center. Jefferson is a well known and loved, centrally-located and visible park in the Beacon Hill neighborhood, which is among the most ethnically diverse zip codes in the country (Gellerman). Nearby establishments include the business district, a public middle school and high school, a community center, day care centers, and the Veterans hospital (Beacon Food Forest). Yet despite all of these resources, which made the sunny, west-facing slope Herlihy sited so attractive to the permaculture students, regions within the Beacon Hill neighborhood have “relatively high number[s] of households without vehicles that are more than one-half mile from a supermarket” (*USDA*), which classifies parts of this neighborhood as food deserts.⁷⁸ More than just an unused slope with beautiful views of the Olympic Mountains and downtown Seattle, this site could be utilized to grow a free, accessible forest of edible shrubs, trees, and groundcovers that would supplement the diets of an entire community, at no financial cost to the community.

The design students presented their final food forest project to a large audience of community members who, much to Herlihy and Cramer's surprise, received it well enough to inspire future meetings on developing it into a reality. By 2010, the year when organizers brought their idea for a food forest to city officials, Mayor Mike McGinn had

⁷⁸ According to the USDA, a food desert is a region where nutritious, fresh, affordable, and culturally-appropriate food is inaccessible (particularly without automotive transportation) for at least 33% of the population, and/or where these foods are only available more than a mile away from urban home dwellers or ten miles away for rural home dwellers. In 2006, there existed more than 6,500 food deserts. These spaces typically exist in low-income rural or urban locales.

declared it “the year of urban agriculture” in Seattle, and supported the project with enthusiasm (Taylor). Seattle City Council members have since created the Food Action Initiative, the goals of which involve improving public health; reducing climate impact; and improving the security of our food supply. Each of these goals is addressed by the BFF project (Beacon Food Forest).

This good fortune indicated to the organizers not only that the city might be more amenable to approving their radical idea than they had imagined, but it also underscored that they were part of a burgeoning grassroots movement for food justice sweeping the nation.⁷⁹ Capitalizing on that momentum and contributing to it, the food foresters proved to skeptical SPU administrators that the space they wished to cultivate—officially designated as water quality land surrounding a city reservoir protected by strict rules⁸⁰—would be designed to enhance water quality by absorbing runoff along the slope, while providing several other key amenities for the community (Beacon Food Forest). SPU granted the food foresters permission to build on and cultivate seven of the fourteen acres, so long as BFF operations were overseen by Seattle Department of Neighborhood’s (SDN) P-Patch staff.⁸¹

⁷⁹ Food *injustice* is defined by Robert Gottlieb and Anupama Joshi as “the maldistribution of food, poor access to a good diet, inequities in the labor process and unfair returns for key suppliers along the food chain” (6). Food *justice* is then defined as “ensuring that the benefits and risks of where, what, and how food is grown and produced, transported, and distributed, and accessed and eaten are shared fairly” (6). Gottlieb and Joshi also note in *Food Justice* (2010) that “food system change” has become increasingly popular. They detail several alternative food groups” who they argue have the potential to “prioritize the need to address inequities while seeking to change the [food] system as a whole”; “be integrated into other social justice movements”; and “to serve as a key common element binding together different groups on behalf of a broad social change agenda” (7).

⁸⁰ For example, this land is designated as “water quality land,” and therefore cannot house restrooms or garbage cans (strict rules apply for additives, etc.)

⁸¹ “P-Patch” is a term unique to Seattle community gardens. Beginning in 1973, the city decided that fallow farmland should remain productive and grown by its surrounding communities, rather than developed. The first farm lent to this community gardening program belonged to the Picardo family, for

Working alongside SPU and SDN, the organizers held three public meetings to brainstorm and strategize the possibilities of starting a food forest. The first meeting, held in February of 2010, was attended by thirty people, and that number steadily grew into the hundreds at successive meetings as enthusiasm spread across the neighborhood, ideas were solicited from residents, and organizers worked feverishly in a massive outreach campaign (Beacon Food Forest). Interpreters were brought into the meetings, the neighborhood was canvassed with six thousand fliers in five languages, and informational tables were set up at community fairs and events (Mellinger). Initial concepts were disseminated in the local public elementary school newsletter, which publishes in fifty languages (Beacon Food Forest). Reporters noted that among the enthusiastic neighborhood supporters were twelve Chinese grandmothers, whose faces lit up when they learned that the forest could include produce such as the Chinese yang-mei berry that they could not find elsewhere (Dolan; Mellinger). Their enthusiasm was shared by BFF organizers, as Herlihy recounts: “It’s nothing but enlightening and empowering to be able to ask your community to dream about what they want and then invite them to *do* that dream. It’s huge, you know? It’s a great and wonderful experience” (Interchange Media).

As these meetings were taking place, the food foresters applied for and won a \$22,500 SDN grant, the bulk of which was spent on hiring a Washington-certified landscape architect to draw up a formal design (Dolan).⁸² With the guidance of

whom the name “P-Patch” is dedicated. Today, the city boasts over eighty-two P-Patch gardens totaling a landmass of over twelve acres and 1,900 individual plots, which are overseen by SDN P-Patch staff (SDN).⁸² The hiring of a Washington State-certified landscape designer was required by SPU and the city council (Harrison, Mellinger).

permaculture specialist Jenny Pell, Margaret Harrison of Harrison Design was selected to draft a final plan that delivered on the collective requests of the neighborhood residents, while considering how natural features of the site—soil nutrient content, water drainage patterns, resident and migratory species, etc.—would interact via permaculture principles. Though aesthetically, permaculture tends to appear disorderly, SPU specifically requested that the site look designed and organized, with informational signage (Harrison). Harrison designed the structure of the forest, but the community was in charge of “paint[ing] the final picture” by suggesting specific species of plants and other features (ibid). Harrison was thus challenged to reach a compromise between the goals of neighborhood residents, city agencies, and the organizers. As one reporter observed, “Since it’s a community project, it has to cater to many groups” (Schiller). But food foresters embraced this challenge as an opportunity to promote a philosophy that celebrates diversity, risk, and faith in the community, as indicated by Herlihy:

We see this as an opportunity for an international kind of food forest because we’re a very diverse neighborhood in a very diverse part of southeast Seattle. We’re looking for the community to help bring in ideas for fruits and trees, so that opportunity is still open to see what we can plant and we’re willing to make that experiment and give it a try. Our creative endeavor is to be experimental and to try to find plants that may be very beneficial to the groups that may eat them. (Marx)

From the beginning, then, planners were intent on considering how a multitude of cultures “can participate and see something of themselves reflected” in this forest (Thompson).

Fortunately, Seattle is an ideal location to grow foods from around the world, given its long growing season, consistent precipitation, and temperate climate. Given this

setting, the multicultural population, and community interest and participation, the list of plants planned for the BFF grew from one hundred species to over a thousand as people proposed their favorite fruits and vegetables from their native countries (Lupo). Requested varieties of produce—many of which are currently planted and thriving at the food forest—include goji berries, loquats, pawpaws, mulberries, Asian pears, plums, walnuts, blueberries, gooseberries, currants, kale, lettuces, heirloom broccolis, raspberries, apples, pears, yuzu citrus, guavas, persimmons, honeyberries, and lingonberries.⁸³ Fruit trees from all over the world will grow alongside international nut trees, which may produce thirty bushels each when mature. The community overwhelmingly desired berry patches, which Harrison designed into both sides of the pathways for easily accessible picking. Permaculture guilds—or microsystems—of companionable ground covers, shrubs, grasses, and trees will exist in clusters throughout the park, each selected with the intent of empowering nearby plants and fungi to grow autonomously without synthetic additives and water inputs. Many of those clusters will reflect geographic or national similarities, as in Somali guilds, Vietnamese guilds, or native Seattle guilds. For example, Pell designed a Chinese guild that includes an overstory of sweet chestnuts, an understory of persimmons, mulberries, and Chinese haws, and a lower zone of common Chinese herbs (Gellerman). Other guilds will be dedicated to their use-value, as with the edible, medicinal, herbal, and crafting guilds (Baskin). “If all goes according to plan,” said Gail Savina, executive director of Seattle

⁸³ This list of species was compiled from a series of reports and interviews on the BFF, including Foley, Husted, Pell, Mellinger, Schiller, Dolan, Lupo, Thompson, Baskin, and Herlihy.

nonprofit City Fruit,⁸⁴ “the harvests could dwarf what would be possible on the same space if it were strictly planted with rows of vegetables” (Dolan). Fruit is especially valuable “because you can grow a lot of food on a really small footprint” (ibid.).

“Living gateways” of fruiting vines will connect these guilds with other community-requested amenities, such as a kids’ play and picking area, filled with thornless, mini-edibles; bike racks; storage and tool sheds; an outdoor kitchen and barbeque; collectively managed garden plots for traditionally-grown vegetables; a community garden of P-Patch plots for individual families (available to rent at \$10/year⁸⁵) (Beacon Food Forest); and a sheltered classroom for community workshops on pickling, preserving, pruning, plant identification, soil building, and seed saving. Notably, neighborhood residents also demanded that at least two out of the seven acres be dedicated to native plants, demonstrating that resident nonhumans are valued members of the neighborhood, and that food forests be conceptualized as beneficial to nonhumans as much as humans. Salal, salmonberries, huckleberries, thimbleberries, willow, and dogwood are among the native species planned, (Dolan), most of which are edible. Those that are not—certain grasses, for example—can be used for crafting (Thompson). All plant material not used for food, habitat, or crafting will be harvested to enhance the food forest through their uses as construction material, firewood, hedges, fences, or mulch (Herlihy).

Perhaps the most radical aspect of the BFF is that it is intended to be foraged by

⁸⁴ City Fruit is a Seattle nonprofit that protects, promotes, educates and helps with the harvest of urban fruit trees (Dolan).

⁸⁵ For the right to rent a ten-foot by ten-foot plot, P-patch members will also be required volunteer eight hours a year in the food forest.

the public, i.e. any person that happens to pass by, or more importantly, *needs* free food. But “the concept of ‘free’,” according to Herlihy, “freaks everybody out” (Herlihy). Some surmise that such insecurity lies in the way the BFF thwarts public-private ownership boundaries (Reddington).⁸⁶ As Harrison recalls, ““There was major discussion about it. People worried, ‘What if someone comes and takes all the blueberries?’ That could very well happen, but maybe someone needed those blueberries. We look at it this way—if we have none at the end of blueberry season, then it means we’re successful”” (Leschin-Hoar). In a different publication she adds, ““that’s been perceived as a good thing. We’ll just plant more”” (Stone). Herlihy agrees: if people overharvest, “then man, they must be really hungry. So if they do that, they deserve it” (Herlihy). Because food foresting is a much more productive method of growing than row-crops and monocultures, Pell emphasizes that her ““biggest *dream* is that it all gets eaten”” (Dolan). It is therefore doubtful that overharvesting will ever become much of a problem, so long as the forest remains healthy. As Herlihy reminded me, creating abundance guards against exploitation (Herlihy).

Still, organizers and community members do not want people uprooting or killing plants; with a project like this that relies on trust and involves large numbers of diverse stakeholders, ““you do have to have etiquette,”” says Pell (Dolan). Yet the more people who remain involved—that is, the more entrenched and valued a public resource the forest becomes, the more stewards it has to protect it. All the same, strategies have been suggested to contend with greedy harvesters, but remarkably, none that would leave

⁸⁶ As food forester Laura Raymond commented, ““Working in a collaborative model requires a different sort of engagement, sometimes a higher level of involvement, than if a space is divided up and people steward their own area”” (Thompson).

anyone empty-handed: display plenty of informational and instructional signage, and keep up community involvement through frequent work parties to increase the amount of eyes on the land. Reporting for *Arcade*, Madeline Reddington puts it nicely:

In making a community endeavor of something as intimate as food, Beacon Food Forest is an experiment about trust. It's a refreshingly bold move— testing the idea that putting faith in the public engenders honorable behavior. The founders hope to see people treat the shared space with consideration, respect each other and harvest responsibly.

Meanwhile, as Herlihy has often reminded reporters, such concerns distract from the overarching values of the food forest, which are bringing communities together and educating people about growing food and sustaining our ecologies. “The *real* harvest,” he says, “is education” (Herlihy), and this education is made possible, in many ways, when soil becomes “the common denominator” for such a diverse neighborhood (Husted).

By December of 2011, the food foresters—now officially named Friends of the Beacon Food Forest—received a \$100,000 grant from the SDN to begin implementing phase one of Harrison’s plan. And thus, a grassy field that had sat idly in the hands of SPU for a century became an experiment to grow the largest forageable food forest in the United States. SPU only allowed the foresters to cultivate a 1.75-acre “test zone” before needing to gain approval to move onto the next phase (Husted), and SDN’s grant was set to expire at the end of 2012, so FBFF “had ample incentive to hit the ground running” (Thompson). They employed the Washington Conversation Corps, which hires homeless youth and drug/alcohol rehabilitation patients, to work alongside Harrison performing grading work and establishing dirt terrace walls (Harrison). In September of 2012, FBFF

hosted the first public work party. One hundred and twenty people from twenty-eight zip codes participated (Taylor, 12) in laying cardboard to shade out the grass, which was then layered with woodchips and watered with mycorrhiza mushroom culture to establish the soil's microbial life (Baskin). Though much of the labor and material was donated, by this point in time the food foresters and SDN P-Patch Staff were managing \$206,295 in grant awards and matching funds from the city (Taylor, 12), much of which was spent purchasing dozens of plants and building supplies, and establishing a resident beekeeper and apiary of native pollinators as well as European honeybees.

Since then, the BFF has enjoyed the media spotlight from near and far, and benefitted from the help of thousands of volunteers, as well as thousands of combined hours of dedicated management and organizing by the steering committee. Though the core volunteers have always been neighborhood residents (Herlihy), social media outreach and mass email updates have been key in notifying and mobilizing eager volunteers outside of Beacon Hill. Volunteers have included University teams, elementary school students, church groups, hospital staff, Rotary Clubs, community court system offenders, and emergency shelter system residents (ibid). University of Washington architecture students built a hexagonal gazebo and benches near the top of the slope for communal gatherings (Taylor, 12). From the first workday, most work parties have involved more than one hundred volunteers at a time, and range in frequency from once a week to several times a week throughout the Spring, Summer, and Fall. A major topic of one of the steering committee meetings I attended in August of 2013 was how to manage the overwhelming demand for volunteerism; food forest organizers only

have so much time to lead events and train people. It was, of course, a good problem to have, but they were also considering how to build upon the excitement and momentum they were currently enjoying in order to sustain the forest well into the future. One strategy is to focus neighborhood outreach attempts on the middle and high school students, in hopes that involving kids will spark interest in their parents (13). Another strategy is to establish partnerships with local businesses and institutions, like the VA hospital, with whom they are trying to institute a therapeutic gardening program (Dolan).

Productive relationships with city agencies have also ensued. According to Herlihy, this has been his most pleasant surprise yet (Herlihy). From Seattle Public Utilities to Seattle Parks and Recreation, the Seattle Department of Neighborhoods, the P-Patch Program, the city council and mayor's office, "[they] have found an unbelievable amount of support," despite the "practical hassle of negotiating" between agencies (Thompson). Furthermore, according to Herlihy, "The process is having unintended additional positive steps: through inter-agency cooperation, the door is open to create a sizable network of urban gardens in the city" (Dolan).

In light of the overwhelming interest in the BFF and consistently popular turnouts for work parties, it is perhaps no surprise that its impact has reached far beyond the confines of the seven-acre forest parameter. For starters, from a trans-local perspective, food foresters hope that volunteers will be able to leave a work party not only with ripe produce, but also with a few whole plants of their own to transplant into their yards (Gellerman). Other excess produce and plants can be donated to food banks (Tabafunda). Some involved in the steering committee envision part- or full-time paid staff helping to

manage the day-to-day forestry work and volunteerism (Dolan; Pell), which would extend organizers' vision of food justice beyond providing accessible food to providing stable incomes in the neighborhood.⁸⁷ From a wider geographical perspective, Harrison notes the potential for the BFF to set a precedent for land use in Seattle, and indeed the entire Pacific Northwest (Messenger). The possibilities for food forest land use seem endless: urban areas could employ them to stabilize and contribute to food shelves, decrease heat island effects (Hilton), establish living genetic seed banks of staple crops or rare and near-extinct species (Gellerman), and provide employment or job skill training programs as well as educational or recreational opportunities. In short, many eyes are on the BFF, evaluating its successes: according to one reporter, "If the Beacon Food Forest meets the excitement that it has already generated, it could revolutionize how cities confront a number of urban issues" (Hilton).

Already, several other food forests are being proposed in city parks such as Basalt, Colorado, Helena, Montana, and Spokane, Washington (Taylor, 13). Austin, Texas has commenced its "East Feast Festival Beach Food Forest," project, which is modeled after the BFF (Toon). Also directly inspired by the BFF is London's Mabley Green, a \$1.5 million project set to become the world's largest "edible park" (Childress). Because the BFF serves so many purposes simultaneously, and because so many cultures are reflected in it, Pell openly wonders, "what pieces of this are going to inspire people to come and take it and make it their own?" (Gellerman).

⁸⁷ According to permaculturist Jenny Pell who advocates for paid staff, supporting neighborhood residents with an income fits into the permaculture principle of "right livelihood" and would contribute to the neighborhood's resilience. However, certain statutes are in place maintaining that because the land is public, it cannot be profited off of; instantiating a paid workforce would therefore require reforming city codes (Pell).

Beacon Food Forest as Justice-Oriented Restoration

The Beacon Food Forest may be an innovative illustration of environmental pragmatism in an era of climate, food, and environmental insecurity. But is it *ecological restoration*? In revisiting the conventional definition of restoration,⁸⁸ it is clear that Beacon Food Foresters endeavor “sustained attempts to compensate for [the] damaging influence” of habitat destruction coupled with nearly a century of park development (in this case, an ongoing domesticated grass monoculture and an untended ridge of invasive blackberry brambles). It is also clear that the burgeoning ecosystem is being “managed for [the] desired qualities” of “self-sustenance and homeostasis,” and that at least two of the seven acres being transformed will be devoted to the planting of natives, which conventional restoration typically advocates.

Yet the BFF project does not satisfy the conventional definition of ecological restoration verbatim. The major discrepancies are a) the site was completely devoid of historical clues as to which former species thrived and coevolved. Indeed, with the exception of two of seven acres that will be devoted to natives, the majority of species slated to be cultivated were *never intended* to align with any historical point in time, and furthermore, brand new nonnatives will be deliberately introduced. This provides a glimpse into just how developed, altered, or degraded our natures can be and yet still

⁸⁸ According to the definition used in Chapter Three, “Conventional ecological restoration is the intentional, sustained attempt by humans to compensate for damaging influences (usually pollution, development, and invasive species) on an ecosystem, and manage it for desired qualities. Though “desired qualities” may vary, restorationists usually strive to manage an ecosystem toward self-sustenance and homeostasis by ensuring that species with a long coevolutionary history on each site can thrive. In response to degradation or species loss, restorationists guide ecosystems so that they may resume behaving as if this never occurred.”

benefit from restorative attention; and b) no trained restorationists have been consulted in this project that has always been, from the beginning, partly *permaculture* in philosophy and methodology, and partly whatever form of gardening or forestry the neighborhood has desired. Instead, FBFF seek to focus on enabling the land to resume behaving in an *ecologically functional manner* by restoring ecosystem services,⁸⁹ yet those that have never before existed, and *without* the explicit guidance of restoration as a model. In these ways, the BFF pushes conventional restoration to radical ends.

A few other restorative projects aimed at relieving environmental, food, or climate injustice do exist in more conventional forms. The award-winning restoration work⁹⁰ happening on the sinking island Isle de Jean Charles off the coast of Louisiana is one such example. Together with hundreds of volunteers, two ecological restoration firms staked a variety of native marsh grasses to floating trays and set them afloat in the waters surrounding Isle de Jean Charles hoping that they would collect enough sediment to take root and provide the island with 1500 feet of secured shoreline. The project not only reintroduces lost habitat but also provides a valuable buffer zone for the impending hurricanes that will continue to ravage the island's ecosystem, particularly after it was left ecologically unstable from decades of oil exploration and drilling.⁹¹ The ability for 277

⁸⁹ As defined in fn13 of Chapter One, "Ecosystem services" include any positive benefit that nonhuman nature provides for people, although in the case of restoration, nonhuman nature can also "service" itself, that is, other nonhumans.

⁹⁰ In 2013, The Environmental Protection Agency awarded the "Saving a Vanishing Culture" project first place in the Environmental Justice and Cultural Diversity category of the Gulf Guardian awards. Distributed since 2000 within the multi-state Gulf of Mexico Partnership Program, these awards honor the agencies, groups, and individuals taking proactive steps to protect or enhance the health of the Gulf of Mexico.

⁹¹ Consecutive hurricanes attributed to climate change—Juan, Andrew, Katrina, Rita, Gustav, Ike—have ravaged Jean Charles with increasing frequency and force, leaving permanent flood and erosion damage on an island whose ecology can no longer recuperate from these storms, and whose residents are without the

residents to continue living there, most of whom are Biloxi-Chitimacha-Choctaw tribe members whose families escaped persecution on the mainland (Psaki, Woodruff), is also threatened. Some classify these families as the nation's first climate refugees (Psaki).⁹²

In spite of such an apt illustration of conventional ecological restoration working toward the ends of justice *and* ecology, I instead focus this chapter upon the Beacon Food Forest because it is a more radical example of how a grassroots, community-developed *restoration*—a *justice-oriented* restoration—could be conceived in an era of “new natures.” More conventional restoration projects can and should be initiated as well, but in the BFF, I argue that we are presented with an example of restoration's truly creative revisioning, where stewards seek to “return” the land to a state of social-ecological function, rather than any historic “origin.” I argue that the BFF embodies ecological restoration's *potential* in an era when, because of climate change, we will have to be increasingly creative and pragmatic.

In order to convincingly argue for the BFF's classification as justice-oriented *restoration*, the following discussion details how the project aligns with a feminist environmental justice politics of nature and advances conventional restoration by productively exploiting conventional restoration's “sites of slippage” discussed in

income to rebuild homes year after year. Oil companies have left their marks on the island community since the 1930s. Long after abandoning the region in the 1960s due to unfruitful oil exploration, six oilrigs and extensive canals plundered through sensitive cypress forests, mangroves, and marshes, remain. They continue to funnel salt water into the fresh water ecosystem (Psaki). Too salinized to grow much of anything and thus retain shoreline, the once 24-square mile island today stands at a half-mile long by a quarter-mile wide (Woodruff). Furthermore, levee building over the years has isolated Isle de Jean Charles from the sedimentation of the Mississippi river, which would have helped replenish the land with nutrients and mass, preventing it from sinking (Simon). Citing costs unable to justify, the Army Corps of Engineers left Isle de Jean Charles out of its plan to construct a 72-mile levee fortress around Louisiana's coastal population to protect from more Katrina-like devastation (Katz).

⁹² A thorough study of how Isle de Jean Charles may demonstrate justice-oriented restoration lies beyond the scope of this project. However, I intend to return to this inquiry in future research.

Chapter Three. Then, I incorporate cutting-edge research in ecological restoration on “novel ecosystems,” which demonstrates that the possibility exists for the BFF to align with contemporary interpretations of ecological restoration. Finally, I show how the justice-oriented restoration embodied by the BFF also demonstrates a promising alternative to the conventional climate change politics critiqued in Chapter Two, thus facilitating ecological livability.

The Cutting Edge of Conventional Restoration

The BFF model challenges conventional restoration’s ideological inconsistencies (detailed as “sites of slippage” in Chapter Three). These include 1) inflexibility regarding the so-called distinctiveness between “restoration” and “restorative”; 2) the goal of erasing restorationists’ mark on the landscapes they assist; 3) excluding the inevitable creativity involved in restoration, whether human or nonhuman; and 4) the strict adherence to a nativist dogma. The first “site of slippage” in conventional restoration that the BFF productively exploits entails the supposed distinction between projects that reflect “restoration” rather than those that are “merely” “restorative.” However, if we take seriously the reality that it is a) impossible to distinguish ecological boundaries without some level of interpretive remove; b) impossible to completely understand every species and ecological relationship on a site, and therefore that it is impossible to c) completely restore any single past ecosystem as if it were frozen in time, then we are left with no other option but to acknowledge, and even embrace, the fluidity between

processes of reclamation, rehabilitation, revegetation, recovery,⁹³ and restoration. Rather than quibbling over indistinguishable boundaries, it seems more important that environmental stewards remain flexible in their interpretations of what a site could involve and for whom it could function, *while* remaining attuned to the goal of “bringing whole system[s] back to a former condition whatever that might happen to be,” to paraphrase Jordan (*ibid.*, 22). Though whole, “complete” systems can never be entirely known, let alone restored, approaching a restorative project with an eye toward which ecological relationships are present versus missing will, at the very least, ensure some foresight about what we can expect out of how a site will perform—and *for whom*—especially in the face of social-environmental stressors.

In the case of the BFF, the once-empty seven-acre slope is arguably reclaimed, rehabilitated, revegetated, recovered, and restored all at once, to different degrees, in various sections of the forest, and depending upon different interpretations. Organizers are also careful to remind the public that the function and purpose of the BFF may well change over time, depending upon the neighborhood’s desires and needs. For now, FBFF want the site to function for current human and nonhuman stakeholders. Had BFF organizers limited their vision and design of the land to Jordan’s narrow interpretation of restoration, they would miss vital opportunities to optimize it for a diverse set of human and nonhuman stakeholders.

A second manner in which the BFF productively exploits conventional restoration’s inconsistencies and directs the field toward *justice*-oriented restoration is by

⁹³ As Chapter Three discusses further, each of these first four processes are said to be merely “restorative,” rather than “restoration,” according to Jordan (*Sunflower*, 12, 22).

explicitly inviting human input and presence back into the nonhuman fold, rather than seeking to erase any human mark on the landscape. Not only does this solidify a distinction between justice-oriented restoration and preservation; it clarifies its distinction from conventional restoration as well. Jordan, a restorationist who has always appreciated the human-nonhuman interplay of every restorative act, helpfully asserts,

If the gardener or farmer in some sense takes charge of the landscape, the restorationist does just the opposite, relinquishing his or her hold on it in an attempt to turn it back over to itself, or, more accurately, to let it be—and to help it become—what it used to be before he or she or we arrived in it. This does not necessarily imply that the model for a restoration project must be a landscape that is “natural” or wild or free of human influence, but only that it be a landscape shaped by forces—including human beings—other than ourselves, however we choose to define that term. (“Restoration,” 27)

The difference between Jordan’s acknowledgement of human presence in the land throughout conventional restoration projects and how the BFF has been envisioned is that the BFF is conceptualized as human space long *after* restoration of the space has been completed. Though permaculture principles maintain that this forest should eventually be as self-sustaining as possible, this is not in order to write humans out of the picture. Instead, it is meant to relieve the need for the kind of continual energy- and labor-intensive inputs required of most agricultural and gardening methods, thus sparing valuable human and material resources. Meanwhile, when considering the use-value of the species selected to be planted, both nutritionally as well as emotionally—the nonnative plants requested by Beacon Hill residents from their homelands could foster a sense of belonging—the forest certainly services humans as much as nonhumans. But most importantly, FBFF envision the forest as a place for people to inspire, educate, learn, and connect. This hands-on, participatory, and open-access ethos is neither

associated, for example, with preserves like our National Parks (which yet require some degree of human management), nor with most restoration projects, where restorationists-as-visitors merely *intervene* in existing ecologies. The BFF, by contrast, requires and inspires ongoing human *engagement*, which could even go beyond Jordan’s opinion of restoration:

With restoration rather than preservation as a model, millions of people will spend more time creating intimate wild places in their own neighborhoods and less time visiting—and consuming—nature in remote wilderness areas. In the process they will get closer to nature than they would hiking or driving through a national park, and they will be helping to build local community rather than weaken it by investing time and resources in vacations and first or second homes in the country. (ibid, 33)

The BFF pushes conventional restoration even further than this because humans might be considered direct beneficiaries of restorative efforts, in addition to nonhumans. In the BFF, justice-oriented restoration has the potential to not only inspire human communion with *nonhuman* nature, as Jordan rightfully argues of [conventional] restoration (“Restoration,” 26), but *human* “nature” as well. The public is invited to reclaim lost knowledge when the BFF creates a platform for education by hosting lectures, tours, and workshops, inviting diverse educators, and even building an outdoor classroom and gathering space. The BFF implicates the public in humankind’s environmental destructiveness by restoring the site’s lost ecological function. The food forest also restores lost human community by working across linguistic, ethnic, racial, and class difference and encouraging connection over at least one major “common denominator”: soil.

A third, related inconsistency clarified for conventional restoration in the BFF is whether or not restoration is “creative” work. While Chapter Three argued for the inevitability of creativity in restoration—a reality imposed by the subjectivity of restorationists and the limits of each project—the justice-oriented restoration of the BFF was undoubtedly creative from its inception. From the very first idea as collaborative group project, to the continual input and brainstorming solicited of the Beacon Hill neighborhood, to the artistry involved in landscape architect Margaret Harrison’s design, to the ways in which the current design has deviated from the original in light of new ideas, various limitations, and unexpected nonhuman proliferations, the BFF is an entirely creative endeavor. This is not to say that the BFF does not also involve a significant amount of science, ecology, city planning, economics, and other factors that constrain the limitless potential of truly creative, collaborative work. Rather, in many ways, these constraints force new kinds of creativity and collaboration across difference.

Furthermore, Herlihy frequently reminds reporters that the BFF design and purpose could change any day, depending upon the will of neighborhood residents (Herlihy). FBFF also acknowledge that much of the BFF design is an exercise in risk; while permaculture specialists understand, to a certain extent, how various species of plants, pollinators, invertebrates, weather conditions, and animals will work together, the majority of the plants are from widely disparate areas of the planet, and have never before shared space. How all of these nonhumans will relate with one another is nothing one could plan for or appreciate ahead of time. Mirroring the unanticipated interactions among diverse human neighbors, there exists an amount of nonhuman creativity—what

shapes the forest will choose to take—yet to be witnessed. For all of these reasons, the kind of restoration illustrated by the BFF is creative, both in a human *and* nonhuman sense.

Fourth and finally, the BFF eschews any strict adherence to nativism that some conventional restorationists may advocate, in favor of a closely tended forest of native *and* nonnative species.⁹⁴ While food foresters are keen on including at least one native species in most guilds, in Herlihy's words,

We'll be dealing with all kinds of stuff. And plant selection is a very tricky issue for us because we're opening [the forest] up to the community with many ideas that we need to be careful not to put in invasives that are coming from other countries or something. But we're experimenters; that is a big part of it. We can't just like follow the map because things are changing and we need to flow with the change. (Herlihy)

Here, Herlihy signals that plant selection and pairing must be done with vigilance and care, so as to avoid releasing invasives into other unchecked environments. But he also suggests that our natures are changing so rapidly that the foresters would be without a historical roadmap even if they wanted one. Part of “flowing with change,” then, is responding to the needs of contemporary, local, mostly native ecologies, *as well as* today's local human inhabitants of the neighborhood, who desire nonnative edibles.

As this summary indicates, the BFF moves in a progressive direction through the slippages of conventional restoration thinking. Yet the question remains: does this direction embody a significant enough departure from conventionally conceived restoration as to warrant a qualitatively different practice? Or as so many restoration

⁹⁴ Even the pollinators will be both native and nonnative. According to Herlihy, both European honeybees and native bees are effective pollinators for most species of plants, but native pollinators can travel much further, and will fly to pollinate even in poor weather, when European bees will not (Herlihy).

scholars and practitioners fear, does such “progressive” thinking mark the “death of restoration” (Light, 107)?

Restoring Novel Ecosystems

While the BFF may demonstrate the possibility of capitalizing on conventional restoration’s ideological inconsistencies in order to push the field toward more progressive ends, the paradox of “restoring” *newly created* lands—a process currently underway at the BFF—remains. Yet even within the field of restoration, scholars and practitioners are beginning to appreciate that climate change could present a great opportunity to co-create resilient *novel* ecosystems in the Anthropocene. As environmental philosopher Andrew Light argues, key to embarking on this path will be “disentangl[ing] restoration from narrow expectations of historical fidelity that do not reflect the current state of restoration practice” (107). I will explore this new progressive way of conceiving restoration to demonstrate that the BFF is an exemplary restoration project in the age of climate change, setting the course for the future of restoration’s sustainability.

In 1990, the SER interpreted the field’s mission as fostering indigenous, “historically accurate end product[s]”: “Ecological restoration is the process of intentionally altering a site to establish a defined indigenous, historic ecosystem. The goal of the process is to emulate the structure, function, diversity and dynamics of the specified ecosystem” (Throop, 49). By 2002, a new concept of ecological restoration was underway. Ecosystem dynamics and human features amidst landscapes were

acknowledged alongside a definition potentially inclusive of “synthetic” features:

“Ecological restoration is the process of assisting in the recovery of an ecosystem that has been degraded, damaged or destroyed” (49). Though the goal of achieving durability [where “durability” implies creating relatively stable systems that allow for natural succession (Light, 114)] instead of historical fidelity is highly contested and often lamented,⁹⁵ I argue that in pursuing durability, restorationists are nevertheless encouraged to remain loyal to the lands they assist. In the first place, their loyalty has always been to assisting extant ecosystems toward sustainable functioning and resiliency. But those systems are now climatically altered; responding to today’s new systems and species is part of remaining faithful to what currently functions, and what will continue to function in the future. Secondly, as environmental studies and philosophy professor William Throop argues, “good restoration” exhibits “loyalty to predisturbance conditions, which may or may not involve exact reproduction.’ There are many ways of being ‘loyal’ that diverge from past ecosystem structures, and the constraints on what counts as loyalty are largely contextual” (49).

For these reasons, today’s restoration theory falls into not one, but three camps: (1) a continued emphasis on restoring historical systems in the name of preservation; (2) a focus not upon maintaining systems based on pre-disturbance conditions and the historical range of variability, but rather using restoration to maintain as much biodiversity and as many ecosystems as possible, given expected climate change; and (3) a proactive attempt to use restoration to mitigate the effects of global environmental change through carbon sequestration (Allison, 103). The latter two represent significant

⁹⁵ Allison writes that no consensus exists in the field, and so it is currently in a state of flux (102-103).

and noteworthy departures from traditional conceptions of restoration. While restorationists and scholars may tend to align themselves among these three ideological camps, I argue that understanding how (and whether) ecologies are responding to climate shifts will be key to appreciating which context-specific approach restoration should take in order to assist in the creation of ecosystem resiliency.

Indeed, context will increasingly be key in the quickly changing Anthropocene. For example, ecologists have recently been noting two “new norms” with respect to classifying ecosystems, which poignantly illustrate McKibben’s assertion that “Eaarth” has replaced the world as we have known it (*Eaarth*, 2). One contemporary ecosystem norm is *hybridity*, wherein some characteristics of historic or current ecosystems are retained, but due to species composition and function changes, these ecosystems exist outside the historical range of variability (Allison, 100). As Allison notes, in the best-case scenarios, hybrid systems still contain original keystone species and many original ecosystem functions (100).

The other “new norm” ecologists have come to expect are “no-analogue,” “emerging” or *novel* ecosystems, which differ in composition and function from present and past ecosystems. They develop when conditions have changed so drastically that keystone species and ecosystem functions that previously characterized a site have been lost.⁹⁶ In these cases, the ecosystem has “crossed a threshold or tipping point” (Allison

⁹⁶ Novel *elements* should be distinguished from novel *ecosystems*. According to Hobbs et. al., “there can be significant novel elements (invasive species, modified soil conditions) without the ecosystem passing a critical threshold that renders it practically impossible to return to hybrid or historical conditions. Hence, there are many ecosystems with novel *elements* that are in fact hybrid between historical and novel” (“Defining,” 60).

102) where it cannot be reversed to the original state (Starzomski, 88-89).⁹⁷ Novel ecosystems arise via land use change, habitat destruction, the arrival of nonnative species, climate change, or a combination of all four (Hobbs et. al., “Why,” 4; Allison, 99; Starzomski, 88-89). “They are a consequence of human activity,” writes environmental studies scholar Brian Starzomski, “but do not depend on human intervention for their maintenance” (88-89). Some scholars, like Michael Perring and Erle Ellis, demonstrate that the majority of the planet’s ecosystems have already crossed from historical to hybrid.⁹⁸ Yet “it is currently impossible to say when we will cross into full global novel ecosystems” (Starzomski, 89).

In these situations, it is clear that restorationists must concentrate on restoring ecosystem functions to ensure the continuation of services relevant to local human and nonhuman stakeholders. It is also clear that this contemporary form of restoration solidifies the potential need for the field to embrace partial restoration (i.e. “restorative”) endeavors, explicit human presence, creativity, and nonnative species into land management schemes.

Nowhere is this more apparent than in the ways progressive restoration thinking is embracing novel ecosystems through the strategies of managed relocation, transformative restoration, and adaptive management. *Managed relocation*, also known as “assisted migration,” “assisted colonization” and “assisted translocation” (Allison, 110), is a restorative strategy wherein humans consciously move at-risk species from a location

⁹⁷ To be sure, certain aspects of novel systems are contested. For example, whether novelty “is a continuum” or whether there exist “clear breakpoints where it is clear that one system is novel and another is not” is subject to debate (Hobbs et. al., “Defining,” 59).

⁹⁸ Perring and Ellis’ research is summarized in Figures 8.1, 8.3, and 8.4 (69-73) of their essay, “The Extent of Novel Ecosystems” (2013).

where they currently exist to a location outside their historical range of variability that is more likely to have better conditions for them in the future—likely poleward or upward habitats (Allison, 110; Starzomski, 93). Essentially responding to novel or hybrid natures by creating *desirable* novel or hybrid natures, there may be different reasons for attempting managed relocation: first, and most typically, managed relocation may promote species dispersal and survival, especially those with poor dispersal abilities, “with the assumption that if we build the proper ecosystem, the more mobile species will come afterwards” (Allison, 110). Another reason may be to avoid ecological surprises brought on by climate change, or alternatively, to design the ecosystems we predict will be present in the future (Starzomski, 93). Managed relocation is clearly an aggressive approach to restoration, and one that necessitates caution in application, but even early attempts have proven promising (in the short-term).⁹⁹

A related response to managed relocation proposed by progressive restorationists is *transformative* restoration, in which nonnative species are planted outside their historical range of variability in order to both replace native and nonnative species lost due to climate change, and invite beneficial nonnative species that will help prevent the establishment of harmful nonnative species. Allison warns that species can appear to be neutral for decades before becoming problematic as conditions change (111), but transformative restoration is a likely future response to likely future scenarios, where it will become increasingly important to anticipate change, mitigate danger, and preserve

⁹⁹ As Allison discusses, “[Managed relocation] is already being used in some situations such as establishing individuals of the rare conifer *Torreya toxifolia* in North Carolina, far from their current home in Florida, and the establishment of several new colonist populations of about a dozen species of trees in British Columbia in areas outside of their distributional limits” (111).

biodiversity and ecosystem services. As ecologist Thomas Simpson summarizes, with such bold approaches to restoration, “maybe, just maybe, we can take most of the plants and animals of that world—that other world before us—with us” (344).

A third response to novel ecosystems that may or may not incorporate managed relocation and transformative restoration is *adaptive management*. This is “a process of experimental design and implementation of management that occurs simultaneously and continuously so that the process of learning about a system happens while the system is being managed” (Allison, 107).¹⁰⁰ To a certain degree, adaptive management has always been inherent to restoration practice. Some contend that what has differentiated restoration from other scientific practices is that restorationists perform research even as they engage in reviving nonhuman nature, which poses unique challenges: “[T]he difficulty with ... restoration... is [that] you’re not gonna have all the questions answered, but you have to do something. You reach a point where you look at the land and you see everything dying and the soil washing away and you don’t know everything at that point, but you know you have to do something” (Helford, 132).

But it is worth noting that with adaptive management specifically in the context of hybrid and novel ecosystems, human needs are addressed alongside nonhuman ecological management. As restorationists like Allison are beginning to appreciate,

Large environmental problems always have social dimensions and it is vital that human societies are included in the planning, management, monitoring and re-adjustment that occur during adaptive management. ...[A]daptive management

¹⁰⁰ This can be likened to the “interactional expertise” Mathias Gross discusses in *Ignorance and Surprise* (2014), where knowledge is gained in dialogue with nature-as-active participant (23): “Interactional expertise in ecological restoration can be developed through encounters with the natural world even though full scientific immersion is not reached. Indeed, much work in ecological restoration is based on a type of knowledge generation that has been labeled ‘discovery in the context of application’” (22).

[is] about “bringing together old knowledge, from diverse sources, into new perspectives for practice.” (108)

From this overview of contemporary ecological restoration theory and practice responsive to climate change, it becomes plausible to understand the BFF as a legitimate, albeit progressive, form of restoration, a restoration that is faithful to burgeoning definitions of the field *as well as* burgeoning novel natures. Though the plants are not necessarily being moved to Seattle in order to thrive *better* than they would in their homelands, the BFF can model *managed relocation*, as plants from around the world are being sowed in hopes that they will prosper in a poleward, temperate climates, and deliver culturally-appropriate foods. The BFF site is undergoing *transformative restoration* as well, as invasive blackberry brambles and monocultured grass are replaced with native and nonnative species in an attempt to both prevent blackberry propagation and transform an unproductive, unused landscape into something completely novel and ecological and utilitarian. Food foresters utilize *adaptive management* in their approach to learning from the forest and its unique species combinations, accommodating their designs and plans as the forest grows in succession, as species needs alter, and/or as human needs and desires evolve [to this point, Jenny Pell lends a helpful perspective: “Culturally, failure is seen as bad, but there’s learning opportunities in failure.... There’s so many mistakes to be made...let’s make them! Then share what we know” (Pell)]. All of this is being accomplished in an attempt to anticipate the future ecological and nutritional needs of Beacon Hill and remediate climate change by capturing carbon and localizing the food supply.

Such experimentation is not without its risks, however, and food foresters, like progressive restorationists, must proceed facilitating novel ecologies with caution. Because experiments on this scale have never been tested in the long term, we cannot know with certainty how well some species will survive in new locations, or whether they will inadvertently introduce new diseases, become invasive, or become hosts to invasive insects and animals. Another discomfort, recognizable as a preservationist sentiment but arguably valid in an era when human actions are so clearly disproportionate to those of other species, is how much more human initiative and manipulation of nonhuman environments these approaches entail than conventional restoration. In response to human-induced degradation, humans will increasingly be accountable for creating, designing, and implementing ecosystems untested by evolution. To this concern, Allison questions, “Are restorationists exhibiting dangerous levels of hubris as they play at being not just local ecosystem managers but planetary managers?” (112).

As I see it, the only reasonable and ecologically faithful response has to be that humans can no longer *afford* hubris as they go about creating novel and hybrid ecosystems, because the stakes are too high; if we fail to learn from past and future mistakes, and if we fail to be responsive to our changing environments by making immediate and as-needed adaptations along the way, we will lose every nonhuman species and system that supports human, and much nonhuman, life on Earth. The long-term implications of facilitating the “evolutionary jumps” inherent in new natures have yet to be understood. But we have little choice in the matter, as well as limited attempts,

at creating natures that will adapt us to new life with climate change, while preventing the escalation of climate change and its effects.

Managed relocation, transformative restoration, and adaptive management have not yet become the norms for restoration, as novel ecosystems have not yet become the norm for planetary existence. Therefore, these approaches should not yet fully replace certain traditional conservationisms and conventional restorations. Further, their utilization should not replace an awareness and skepticism of the arrival or proliferation of nonnative species that are causing significant problems. Finally, this discussion should not be interpreted as an argument that novelty—whether climatically induced or human engineered—is intrinsically good or beneficial.

However, choosing to ignore hybrid or novel ecosystems altogether as being unworthy of stewardship is as dangerous as the drivers of climate change itself. Instead, humans can utilize novel approaches contextually, alongside more conservative approaches, in order to respond adequately to the specific present and future needs of a site. Furthermore, as Light et. al. summarize in “Valuing Novel Ecosystems” (2013), novel ecosystems could even open opportunities previously unknown or unforeseen. Some may include the improved benefits associated with explicitly designed ecosystems, which could deliver specific functions for specific stakeholders; ecosystems designed with higher diversity, which may also produce increased resilience in the face of rapid changes; serving as valuable informational sites that build understanding for how to intervene in novel ecosystems; and the fostering of new environmental values (258-259).

In the BFF, each of these potentialities is possible. This project thus paves the way for new modes of appreciating, utilizing, and valuing nonhuman nature.

Fostering Ecological Livability at the Beacon Food Forest

In addition to demonstrating a pragmatic and future-oriented alternative to conventional restoration, the BFF also provides alternative strategies to the conventional ways with which climate change is contended. In contrast to the individualist, market-based, and globally managed climate schemes critiqued in Chapter Two, the BFF's hybrid-novel ecosystem facilitates *ecological livability* by presenting the public with a contextualized model of a collective, market-alternative, participatory *justice-oriented restoration* project in an era of burgeoning climate devastation. This kind of response both to social marginalization as well as environmental degradation will be key to ensuring the mutualistic relationships that build environmental justice, food security, and climate resiliency.

Collective Action

A major limitation of common climate change “interventions” put forth for the past three decades is the individualism they promote, which fails to hold larger systemic and institutional influences, such as government, corporations, and economically privileged populations, accountable. Further, these influences obscure the nuanced, often political, ways in which the causes and effects of climate change are stratified, effectively homogenizing the varying social positions and relations to power that would reveal active versus passive perpetrators of climate change (however complicated and sometimes

contradictory they may be). Instead, effective solutions to environmental degradation will have to make transparent the connections between such individualist influences as voting, consuming, disposing, energy-use, transport, etc., and such institutional influences as corporate funding, industry regulation, trade policies, crop allocation, employment rates, farm policy, etc. The BFF elucidates these kinds of connections, moving food foresters beyond merely individualist solutions to food insecurity.

It is helpful to compare the BFF model to the community garden model, the latter of which has become an important, increasingly popular neighborhood response to food insecurity. While community gardens take different forms across the country, there are certain generalizable features. For example, community gardens usually cost money: plot renters pay an annual (though often nominal) fee. Community gardens are also typically meant for individual or single family-use, and therefore their impact typically ends with the individual or family. This, of course, is still no small feat: community gardens are increasingly relied upon to “fill in the gaps” for families in need of fresh, affordable produce. They can also be spaces of socialization and community, neighborhood beautification and revitalization, oases of safety amid crime-ridden blocks (Crouch), and much needed habitat for pollinators and migratory species. For all of these reasons, community gardens can be said to be both individualistic solutions to food insecurity and climate change, as well as, in some cases and to varying extents, potential sites of community building and collaboration.

The vast majority of the BFF on the other hand, is free for foraging and accessible to anyone, any time (the exception being the small section devoted to community garden

“P-Patch” plots), meaning that the goods are not only produced collectively, but are also distributed *for* the collectivity. Further, there are no bounds to the forest; the public has a right to glean from the entire forest, rather than an individual plot. All of this makes a big difference in a food desert, where zoning politics both reflect and amplify income disparities and racial stratification, resulting in curtailed access to local, organic, GMO-free food (which can also be prohibitively expensive).

While the BFF may also provide all of the other amenities possible in community gardens (socialization, beautification, safe space, habitat, etc.), the next feature that truly distinguishes the BFF from community gardens—thus solidifying a decisive break from individualism—is that the forest is foremost about community building and education. It is about teaching the food production skills much contemporary U.S. culture has lost, and providing a space to take risks in hopes of carving a path forward for novel plantings and pairings in a climate-changed future. This focus has good potential to overcome the “disempowerment problem” Cuomo warns against with respect to individualist environmental solutions (708),¹⁰¹ in that energy and resources that *could be* spent on taxing personal lifestyle changes are instead targeted toward building community and enhancing a food justice movement that increases political and environmental awareness and power. Much individual satisfaction is certainly possible—if not probable—on personal levels, from the psychological and physical health benefits of volunteering to the nutritional benefits of consuming fresh, pesticide-free, organic nuts, fungi, and produce.

¹⁰¹ Cuomo’s “disempowerment problem” discussed in Chapter Two refers to a consequence of a lack of personal choice within climate solutions, such as reduced fossil fuel consumption. She argues that people are likely to feel overwhelmed, and depressed when they reason that they have little power to influence climate change in meaningful ways (702-703).

But the collective potential for empowerment and sustainability is even greater: education and community connectivity can span geographies, ethnicities, and generations. Already, Beacon Food Foresters have witnessed their actions inspire other cities, schools, and families to cultivate their own food forests on park lands, private lots, backyards, and school lawns.

The BFF also influences wider scales of power: local, state, regional, national, and/or international communities, businesses, and governing bodies. While there is ample evidence that the BFF has motivated several other urban agriculture and food forests, there is less evidence that the BFF has inspired local business or corporations to become more socially just or environmentally minded (a partial explanation for that can be found in the upcoming section). It *is* evident, however, that in order for the BFF to exist in the first place, and continue expanding into its seven acre allotment, several government agencies had to get involved: Seattle Department of Neighborhoods and P-Patch staff, Seattle Public Utilities, Seattle Parks Department, the city council, and the mayor's office (*ibid*). Remarkably, the BFF's influence is reaching beyond the seven-acre lot and directly into these agencies, leading to a possible (or partial) resolution to the "insufficiency problem" Cuomo laments regarding mainstream, individualist climate resolutions (70).¹⁰² As Herlihy recounts,

People have been proud of this project for the intergovernmental agency relationships we've...created: [we've] been the focal point between SPU, Seattle Parks Department, the community, the mayor's office, and the council...All those people have been involved in—or have had to *get* involved, whether they like it or not—due to the community's demand, and due to this novel use of open space.

¹⁰² Cuomo's "insufficiency problem" discussed in Chapter Two describes a consequence of individualist solutions to climate change. While ethically imperative, these may yet not suffice as adequate mitigation, which can only be accomplished by "meta-level emitters such as corporations and governments" (701).

...We're demonstrating what you can *do* with public land, right? And we're lucky that SPU and public agencies are *letting* us do that, to some degree, but we're also setting a big example for the city. There are big public gardens [elsewhere].... but...this one's very high on the list as far as involving a lot of different groups and forcing that dialogue and introducing the language about urban agriculture into the language of these agencies as well and having *them* adopt *our* policies about how to use the land and how to grow community gardens and how to stretch that boundary. (Herlihy)

For example, "*because our language is going through these agencies...[and] councils*"

(emphasis in original), says Herlihy, a number of other government organizations, especially those "looking to heal," like the Indian Health Board, the Veteran's Hospital—a federal agency—and the Community Court, have contacted the BFF in search of partnerships and programming opportunities (ibid). In these complex ways, the BFF has not only benefitted neighborhood residents and environments, but has also positively influenced institutional spaces of power and privilege, by holding the local government accountable for ensuring food access *at* the BFF, and inspiring it to expand sites *like* the BFF throughout the city.

Market-Alternative

Generalized market responses to climate change reflect the popular trend of channeling environmental action into economic "fixes" that typically allow entrenched financial systems and lifestyles to proceed without reformation. In so doing, they usually fail to confront environmental destruction, as well as the social causes wrapped up with them, in any lasting or meaningful way.

This is why so many effective climate justice initiatives have completely circumvented "business-as-usual" avenues, and the BFF is no different in this regard. Food foresters nearly avoid market participation altogether by a) localizing the food

supply, which greatly reduces the need for energy-intensive transport and refrigerated storage; b) planting self-propagating perennials that not only return every year, but once mature, require little maintenance and no synthetic additives; c) ensuring a source of *free* food, so that residents have an outlet for food consumption that lies outside the economic (and conventional farming) grid; and d) opening the space to any public, which thwarts the processes of ownership and land allotments crucial to capitalist markets. The only possible exception to a full circumvention of market participation is the fact that the BFF has been funded by city grants and exists on city agency-owned land, which taxpayers subsidize. On some level, it is safe to assume that the city is willing to invest financial resources into this project because they see the BFF as alleviating financial burdens for the city or enhancing property values.¹⁰³ At the same time, however, by awarding food foresters sizable grants to transform this land, Seattle is also participating in a redistribution of financial resources that directly impacts, and in some ways, compensates food desert victims.

The most overt way the BFF avoids being colonized by capital and protects their mission from being hijacked by corporate interests is in the steering committee's steadfast decision to refuse the funding of any business whose ethics fail to comply with food forest principles and the goals of their stakeholders. Herlihy explains their stance:

We have to stick to our ethics in how we relate to nature. That's a big one: how are we going to grow food? Are we doing justice to the ecosystem? To the planet? To the region? The local area? To the people getting involved? [I]f you're getting involved or want to provide funding or some kind of collaboration, then you have to follow that. (Herlihy)

¹⁰³ The extent to which projects like the BFF are advantageous to cities, placing the burden of food production, safety, and affordability on the community's shoulders rather than the government's, where it ought to be, demands further discussion apart from this study.

The food foresters as a whole are not necessarily anti-market or anti-corporation; they admit that sometimes “healing the land” requires corporate funding, and they have been fortunate to receive enough funding from public sites to turn down corporate offers.

Herlihy elaborates further:

We turn down corporations. We...will allow them to come and work, but you cannot provide funding or something so that you can put your logo on ours. We're not associating with...groups like that. [...] We're just dubious [that they] fit[] in with our policies and ethics. Like with Whole Foods [to whom food foresters turned down offers to supply food for their work parties], [it's] mostly their GMO issue¹⁰⁴ and what they're labeling as organic: they've been busted several times for labeling...nonorganic things...as organic. They were *not* behind labeling GMOs; they have since shifted—or their *workers* have since shifted—to supporting our next initiative in November for labeling GMOs, which is *huge* across the country.... (ibid, emphases in original)

Yet Herlihy admits the trade off is hard; the BFF could always use more donations.

Permits, plantings, signage, research—all of it is very expensive. But respecting the principles outlined by their community is valued, because they understand what they do in relationship to local-global processes of climate-, energy-, and food-in/security. The pathway for relationship building and understanding is not entirely foreclosed, however: “We're pretty radical. ... We're willing to say no. If you've done bad stuff in the past, your corporation, you know, we'll tell you about it. But if you want to come work and learn how to do it better, we will totally accommodate you” (ibid).¹⁰⁵

¹⁰⁴ According to several consumer and organic watchdog organizations, Whole Foods deceived their customers into believing the products they were buying were organic and GMO-free, when in actuality, they were not (Adams). Up until the last two years, Whole Foods also failed to support propositions in California (Proposition 37) and Washington (Initiative 522), for example, that demanded GM product labeling (Adams). By Spring of 2013, Whole Foods announced its support for 522, and launched a nationwide campaign, “Will Vote for Food” (WillVoteforFood.Com) to support initiatives for food company transparency, food labeling, and customer education on GMOs (Ragoff).

¹⁰⁵ One thing food foresters will have to remain cognizant of, even if they can afford to continue developing the land without corporate sponsorship—and thus stave off corporate push to colonize, rebrand, or market

Participatory Democracy

Many contemporary attempts at forestalling climate change rely on centrally managed models with elitist leadership, rather than democratically designed, participatory solutions. While politicians, businesspeople, and ambassadors frequently delimit which interpretations of land use, natural resource access, and zoning are admissible, setting boundaries between possible and impossible action, food foresters challenged city planners to reconceive a seven-acre park space. From the very beginning, the students who envisioned the food forest brought their idea to the public, making the project both *by* the people and *for* the people. This demonstrates how integral “nature’s publics” can be to our ecologies as the nonhumans who provide ecosystem services.

Emerging from the ground-up, neighborhood residents took food security, climate change-resiliency, and environmental health into their own hands, and made demands of their elected officials to bring the food forest into fruition. The BFF has therefore been an “anti-Global Marshall Plan” from the beginning: while the forest can yet exist as a part of a broader coalition or international network of environmental justice initiatives, thus contributing to a broad movement with shared goals, the project itself is decentralized, context-specific, and participatory in its decision making.

Among attempts to relieve food insecurity and ecosystem destruction, the power dynamics of the BFF are unfortunately rather unique, according to Allison (179). Such significant problems are often addressed “from the top,” with “large government or

the BFF and its plantings in any way—is the gentrification of this working class, ethnically diverse neighborhood. The class and racial demographics of some U.S. neighborhoods changed after productive community development resulted in attractive community gardens and reduced crime rates, ushering in higher rents and property taxes (Crouch, *Grist*).

multi-national organizations developing the design and protocol” (179). Local individuals or organizations are then obliged to implement those plans.

[S]imply imposing a set of plans and regulations from the top has not worked well in many ecological management programs.... [I]f the flow of information, regulations, and requirements are all in one direction—from a large bureaucratic organization to local individuals who have to live with the results of that plan—there is a high potential for resentment to build up. Resentment almost always results in a failure to achieve the grand outcome envisioned during the initial planning process. (179)

It is from this kind of experiential knowledge that so many Global South, indigenous, and marginalized communities are skeptical that U.N. programs like REDD+ will have beneficial impacts on their lives and livelihoods.

Many members of the BFF say that their inspiration for approaching their forest development democratically comes from observing healthy nonhuman ecosystems, and modeling the biodiversity they demonstrate. As the project’s website asserts, “The Beacon Food Forest recognizes diversity as the definition and essence of a healthy ecosystem and a healthy human community.” To paraphrase Herlihy’s interpretation of this value, a healthy forest system works because many species of plants empower one another; indeed, most individual species would wither without the symbiotic benefits neighboring species offer. Similarly, with

diverse...people, you have a diversity of ideas and solutions.... Key to the success of a community garden is that there’s enough input and solutions being offered, especially in this changing planet. We need people from [various] cultures who can introduce new ideas that may be the saving grace of the garden, or that can produce the biggest harvest of the garden. (Herlihy)

Cultural and biodiversity alone, however, cannot ensure the food forest’s success and long-term sustainability. Diversity has to be appreciated, cultivated, and fostered

through outreach, stakeholder participation, and ongoing negotiations. At the BFF, a plurality of ideas for forest design, methodology, purpose, and plantings were solicited from the very first meetings and mailings, and continue to be collected from emails, volunteer input, and social media, then discussed at steering committee meetings. Participants from near and far have overwhelmed food foresters with their enthusiasm and eagerness to volunteer.

Despite their “free and open to all” ethos, the food forest is not cooperatively owned, which would have made it a truly democratic commons. Still, the BFF’s success *did* inspire Seattle Public Utilities to open two more of its unused lots in Magnolia Manor and Bitterlake to the public, who desired community garden P-Patches (Pernitz). According to SDN’s Community Gardening Coordinator Sandy Pernitz, “with [their] continued success... [SPU] will see the benefits of community run gardens/forests on their land and continue to broaden that opportunity where appropriate” (ibid).

Since the ethos expressed by FBFF travelled through various government agencies, the P-Patch Community Gardening Program has instantiated site-specific use agreements for the first time (Pernitz). This action illustrates that SDN recognizes how important it is for various publics to determine their own needs and values; as progressive-minded restorationists Hull and Robertson argue, “‘what is best’ is negotiable,” “and many people are equally well qualified to participate in the negotiation about values” (114).

More pragmatically, if these gardens—indeed, if *all* our environments—are to be sustained, they must hold particular value to the people using them and to the places

where they exist. In recent studies, several restoration scholars acknowledge the importance of engaging the public in their work (Yung et. al., 252; Allison, 179; Ingram, 236), not only because, as Yung et. al. argue, “Public engagement in public land management and public policy formation is increasingly seen as a democratic imperative,” but also because restoration is more likely to succeed when the public has a say, and a stake, in its development and outcome. Especially in an era when the growing human footprint requires greater attention to how urban and other domesticated habitats can be effectively used toward biodiversity and ecosystem services, stakeholder participation and collaboration are more valuable and necessary than ever. Yet whether pragmatism or ethics guides these restoration scholars’ embrace of the feminist environmental justice imperative that “nature” implies “nature’s publics,” it is clear that justice-oriented restoration is both possible, and perhaps probable, in a historical moment that can no longer accommodate a nature-public distinction.

“Looking-Back” as Looking Forward

I conclude this project by highlighting some eloquent words included in a recent mass email update to all those included on the BFF listerv. I extend their use of “mutualism” as a metaphor that underscores why the BFF is an exemplary pragmatic embodiment of feminist environmental justice theory:

Dear Food Foresters and Friends,

Mutualism is one of several forms of symbiosis where two or more species exist and benefit from the relationship.

Food Forestry and good organic gardening practices look to create mutualistic relationships between plants, fungi, insects and yes...humans. A big example of this is the mutual relationship between fungi and plants, 48% of land

plants depend on a mycorrhizal relationship to supply inorganic and trace elements for uptake. The fungi depends on the plants for food and vice versa, humans eat and help propagate both. Another example of mutualism is pollinators and plants, 30% of our food depends on pollination by insects, insects depend on the pollinating plants and at the same time the plants depend on the insects for propagation. Fungi, plants, insects and humans have a mutually beneficial relationship in which all individuals benefit....

The question is are we humans doing our part to keep a mutualistic relationship with the ecology of the planet, our Host?

Can we say a majority of our actions as a species are beneficial with our ecology or do they fall into the other two categories of symbiosis: Commensalism; one organism benefits without affecting the other or Parasitism; one species benefits while the other is harmed?

Want to form a mutualistic relationship in your life?

Grow food with a community of diverse species and join in the work party at the Beacon Food Forest to help the plants, fungi and insects help you. Together we form an efficient natural cycle and will enjoy many beneficial meals together. (BFF listserv)

The impetus of mutualism is response, as illustrated in the central ethical question of this email: how do BFF stakeholders want to *respond* to their changing ecologies and the dilemmas they face individually and collectively? The fungi at the forest, FBFF write, *respond* to plants in order to empower them to survive, and the plants *respond* to fungi in nourishing them through decomposition. Plant and animal life *respond* to human needs for sustenance, livelihood, companionship, spirituality, and recreation. How do we humans want to *respond* to plant, animal, and human life?

Donna Haraway argues that responding to another creature, human or nonhuman, is less about *reacting* and more about *offering something in return*, as the word's Latin etymological roots indicate (*When*, 19-27). True response is about "looking back,"¹⁰⁶

¹⁰⁶ This particular discussion on "looking back" is inspired by Haraway's critique of philosopher Jacques Derrida's famous study, "And Say the Animal Responded?" (1997). In his essay, Derrida ponders his relationship with his cat, particularly their ability to respond to each another. What makes this piece canonical in philosophy and critical animal studies is that Derrida was rather uniquely, for his time and community, willing to acknowledge that he was in the presence of a *someone*, rather than a *something*. Yet

about taking pause from pressing forward with one's own agenda and momentum in order to allow oneself to be interrupted by another creature through observing, listening, awaiting communication, looking for connection. Assuming that one has the capacity to respond, replying to or answering that creature means taking responsibility for it. Here, reciprocating action is found—the basis of each and every relationship.

An ethos that has always united restorationists has been a duty to respond to ecological damage, and in so doing, respond to damaged relationships between humans and nonhumans as well (Throop, 54; Jordan, *Sunflower*, 2-3). Allison summarizes this ethos aptly, when he argues that restoration is about transforming human-nonhuman relationships from a lopsided, one-way use of ecosystems and resources for human benefit with no thought of the consequences to other species or future generations of humans, “to a relationship of mutual interaction in which humans learn to work with ecosystems for the benefit of both. [...] Restoration is about recognizing the destructiveness of our actions and reining in our behavior so that we become part of the ecosystem, not its destroyer” (173).

Up until climate change started accelerating, responding faithfully to degraded natures may have meant *looking-back* in time to gauge what might make nature healthy again. Even then, with historical models as guides, the “crisis discipline” of restoration involved a degree of acting without perfect knowledge and perfect ability to predict outcomes (Allison, 211). Environmental sociologist Reid Helford encapsulates this well:

Haraway argues that Derrida “came right to the edge of respect” with this essay, for he failed to “become curious about what the cat might actually be doing, feeling, thinking...” (20). “Incurious,” Haraway writes, “he missed a possible invitation, a possible introduction to other-worlding,” fell short of true response, and foreclosed the possibility that his cat is a being who also “looks back” (20-21).

“Restorationists describe their work as urgent and warn of the dire consequences of losing plant and animal species forever. Restoration science can’t look like other basic scientific research, they claim, because it must save nature at the same time it strives to study it” (132). Yet despite imperfect knowledge, restorationists’ responses have been *faithful*, because degradation necessitates immediate action as much as understanding.

Now that climate change is here, restoration must press on with amplified imperfections in knowledge and outcomes. With climate change, restoration’s response—a *looking-back*—will have to be about *looking-forward* to gauge what might make nature (all of its human and nonhuman inhabitants) healthy again. In failing to do so, restoration fails to create an intentional and desirable future. In failing to *innovate* as we look forward, by remaking ecologies as they once were or otherwise would have been, out of a sense of guilt, restitution, or nostalgia, to paraphrase environmental justice researcher Ronald Sandler, we force the world to adapt to *us*, rather than us to *it* (77). In short, we fail to respond in a mutual relationship, and we fail to realize the opportunity that lies within the crisis of climate change to remake an environmentally *just* world from a socio-environmentally *damaged* world.

The shift in how restoration should respond to climate change is echoed in recent conversations on the efficacy of “sustainability” as a concept to guide contemporary environmentalisms. As geographer Melinda Harm-Benson and legal scholar Robin Craig argue in “The End of Sustainability” (2014), because “‘sustainability’ refers to the long-term ability to continue to engage in a particular activity,” and “assumes that we a) know

what can be sustained and b) have the capacity to maintain stationarity,”¹⁰⁷ sustainability may no longer be the adequate or appropriate response to Anthropocene conditions.

They explain: “With climate change, we face a future in which we have no idea what we can sustain” (ibid). As a metric to formulate environmental goals, “resiliency” holds more promise than sustainability because “resilience thinking acknowledges disequilibrium and nonlinear, continual change—often as a result of crossing a ‘tipping point’ or threshold” (much akin to our experience of climate change) “and reorients us to focus on *coping* with change” (ibid).

Coping also involves response, but it qualifies the kind of response that is possible. From its etymological origins, “coping” arises when two parties “meet in battle” and “come to blows.” This definition suggests disequilibrium, challenge, and difficulty. “Coping” entails dealing effectively within conflict, and “resilience” is the capacity to recover from conflict. If resiliency is to become the most appropriate metric to gauge environmental goals, it also points toward an important qualification of what mutualism can mean in the Anthropocene, when so many species, systems, and cultures have been lost or fundamentally altered, and when so many others will endure forever changed. It is possible—indeed, inevitable—for mutual relationships to avoid commensalism or parasitism while yet occurring inside differential relations of power. As Haraway reminds us, “the capacity to respond, and so to be responsible, should not be expected to take on symmetrical shapes and textures for all the parties” (*When*, 71).

Mutualism is not so much about equality as reciprocity across difference. This is perhaps

¹⁰⁷ “Stationarity” refers to an ecosystem’s ability to continue operating “within an unchanging envelope of variability” (Harm-Benson & Craig).

where a feminist environmental justice-informed restoration can be most impactful: though (some/many) humans have forever damaged and altered the course of planetary history through domination, (some/many) can yet make *reparations* with human and nonhuman partners in our coexistence: from the Latin “reparare,” to “make ready again,” justice-oriented restoration can respond to injustice and ecological degradation by building more resilient novel natures, “making ready again” *ecologically livable* environments. Moving forward into the unknowns, risks, losses, and opportunities engendered by climate change, our continual question must always be, what should a *responsive sharing* of biosocial vulnerabilities *and* resiliencies look like in our contextualized restorative practices? If we are to create an ecologically livable world for as many humans and nonhumans as possible, then justice-oriented restoration must be one of our valued responses to climate change.

Bibliography

- Adams, Mike. "Whole Foods Knowingly Engages in Massive GMO Deception." *Natural News*. 26 September 2012.
http://www.naturalnews.com/037329_whole_foods_gmo_undercover_video.html
- Aiken, Scott. "Comment: The Significance of Al Gore's Purported Hypocrisy." *Environmental Ethics* Vol. 31, Iss. 1 (2009): 111-112.
- Alaimo, Stacy. *Bodily Natures: Science, Environment, and the Material Self*. Bloomington, IN: Indiana UP, 2010.
- . "Insurgent Vulnerability and the Carbon Footprint of Gender," *Women, Gender, and Research/Kinder, Kon, og Forskning* 3 (2009): 22-35.
- . "Trans-Corporeal Feminisms and the Ethical Space of Nature," *Material Feminisms*. Eds. Stacy Alaimo & Susan Hekman. Bloomington, IN: Indiana UP, 2009: 237-264.
- . *Undomesticated Ground: Recasting Nature as a Feminist Space*. London: Cornell UP, 2000.
- Alaimo, Stacy, and Hekman, Susan, "Emerging Models of Materiality in Feminist Theory," in *Material Feminisms*, eds. Stacy Alaimo and Susan Hekman. Bloomington, IN: Indiana UP, 2008: 1-19.
- Agathangelou, Anna M., M. Daniel Bassichis, and Tamara L. Spira. "Intimate Investments: Homonormativity, Global Lockdown, and the Seductions of Empire." *Radical History Review* (2008): 120-143.
- Alexander, Sasha; Nelson, Cara R.; Aronson, James; Lamb, David; Cliquet, An; Erwin, Kevin L.; Finlayson, C. Max; de Groot, Rudolf S.; Harris, Jim A.; Higgs, Eric S.; Hobbs, Richard J.; Robin Lewis III, Roy R.; Martinez, Dennis; and Murcia, Carolina. "Opportunities and Challenges for Ecological Restoration within REDD+." *Restoration Ecology* Vol. 19, No. 6 (2011): 683-689.
- Allison, Stuart K. *Ecological Restoration and Environmental Change: Renewing Damaged Ecosystems*. New York, NY: Routledge, 2012.
- Anderson, M Kat. *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*. Berkeley, CA: University of California Press, 2006.

- Banse, Tom. "Edible Public Forest Takes Root in Seattle." *NPR: NW News Network* 29 August, 2013. <http://nwnewsnetwork.org/post/edible-public-forest-takes-root-seattle>
- Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke UP, 2007.
- . "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter," in *Material Feminisms*, eds. Stacy Alaimo and Susan Hekman. Bloomington, IN: Indiana UP, 2008: 120-154.
- Baskin, Martha. "Beacon Hill: The City's New Urban Gardening Hub?" *Crosscut* 22 August, 2013. <http://crosscut.com/2013/08/22/environment/116075/beacon-hill-beans-and-food-forest-mix-it/>
- Beacon Food Forest. <http://www.beaconfoodforest.org>
- Beacon Food Forest Listerv. "Mutualism." 13 May 2014. Email.
- Borrell, Brendan. "Real Good or Feel Good? Does Ecosystem Restoration Pay Off?" *Scientific American* 30 July 2009
<http://www.scientificamerican.com/article.cfm?id=does-ecosystem-restoration-pay-off>
- Bowden, Charles. "Native Lands" *National Geographic* Aug. 2010
<http://ngm.nationalgeographic.com/2010/08/native-lands/bowden-text>
- Bratton, Susan Power. "Alternative Models of Ecosystem Restoration," in *Environmental Restoration: Ethics, Theory, and Practice*. Ed. William Throop. Amherst, NY: Humanity Books, 2000: 53-68.
- Buckley & Niemi. "Climate Change Implications for Ecological Restoration Planning," *Human Dimensions of Ecological Restoration: Integrating Science, Nature, and Culture*. Eds. Dave Egan, Evan Hjerpe, & Jesse Abrams. Washington DC: Island Press, 2011: 177-187.
- Butler, Judith. *Frames of War: When Is Life Grievable?* New York, NY: Verso, 2009.
- . *Undoing Gender*. New York, NY: Routledge, 2004.
- CO2Now.Org Jan 2014 <http://co2now.org/Current-CO2/CO2-Now/annual-co2.html>

- Carr, Carolyn. "Re: Restoration." Discussion with Friends of the Mississippi River's consulting ecologist. 1 Sep. 2011. E-mail and phone interview.
- Castle, Stephen. "EU Carbon Trading Scheme Failing to Curb Emissions from Big Polluters." *The Independent* 3 April 2007.
- Cole, Luke W. & Foster, Sheila R. *From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement*. New York: New York UP, 2001.
- Colebrook, Claire. "On Not Becoming Man: The Materialist Politics of Unactualized Potential," *Material Feminisms*. Eds. Stacy Alaimo & Susan Hekman. Bloomington, IN: Indiana UP, 2009: 52-84.
- Cresswell, Tim. "Weeds, Plagues, and Bodily Secretions," *Annals of the Association of American Geographers* Vol. 87, No. 2 (1997): 330-345.
- Crosby, Alfred. *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*. Cambridge, UK: Cambridge University Press, 2004.
- Childress, Cerena. "Seattle's Urban Food Forest Open For Foraging Late Summer 2014!" *Green Bean* 23 May, 2014
<http://greenbeanconnection.wordpress.com/2014/05/23/seattles-urban-food-forest-open-for-foraging-late-summer-2014/>
- Crouch, Patrick. "Evolution or Gentrification: Do Urban Farms Lead to higher Rents?" *Grist* 23 October, 2012 <http://grist.org/food/evolution-or-gentrification-do-urban-farms-lead-to-higher-rents/>
- Cuomo, Chris. "Climate Change, Vulnerability, and Responsibility." *Hypatia* Vol. 26, No 4 (2011): 690-714.
- Di Chiro, Giovanna. "Nature as Community: The Convergence of Environmental and Social Justice," in *Uncommon Ground: Toward Reinventing Nature*, ed. William Cronon. New York: W.W. Norton and Company, 1995: 298-320.
- Dolan, Maria. "A Garden of Eating Blooms on Beacon Hill." *SeattleMag.Com* August 2012. <http://www.seattlemag.com/article/garden-eating-blooms-beacon-hill>
- Dunwiddie, Peter, Hall, Sonia A., Ingraham, Molly W., Bakker, Jonathan D., Nelson, Kara S., Fuller, Roger, and Gray, Elizabeth. "Rethinking Conservation Practice in Light of Climate Change." *Ecological Restoration* Vol. 23, Iss. 3 (2009): 320-329.
- Durban Group for Climate Justice. <http://www.durbanclimatejustice.org>

- Durban Declaration for Climate Change: “Climate Justice Now!”
<http://www.carbontradewatch.org/durban/statementeng.pdf>
- Environmental Protection Agency. “Gulf of Mexico Program: Gulf Guardian Awards.”
<http://www.epa/gmpo/index/html>
- Erazo, Juliet. “REDD: Development Opportunity or Neoliberal Threat? Indigenous Organizations Take Opposing Views.” *NACLA Report on the Americas* Vol. 46, Iss.1 (2013): 55-60.
- First National People of Color Environmental Leadership Summit. “Principles of Environmental Justice.” <http://www.ejnet.org/ej/principles.html>
- Foley, James A. “Seattle’s Beacon Food Forest to Provide Free Food for All.” *Nature World News* 7 June, 2013.
<http://www.natureworldnews.com/articles/2340/20130607/seattles-beacon-food-forest-provide-free-video.htm>
- Foucault, Michel. “*Society Must Be Defended*”: *Lectures at the College de France, 1975-1976*. New York: Picador, 2003.
- Fox Keller, Evelyn. “Secrets of God, Nature, and Life,” in *The Gender and Science Reader*. Eds. Muriel Lederman and Ingrid Bartsch. New York, NY: Routledge, 2001: 98-110.
- G8. “Documents of the G8 Summit 2009: Declaration of the Leaders of the Major Economies Forum on Energy and Climate” (2009).
www.g8italia2009.it/G*/Home/G8-G8_Layout_locale-1199882116809_Atti.htm
- Gaard, Greta. “Living Interconnections with Animals and Nature,” in *Ecofeminism: Women, Animals, Nature*. ed. Greta Gaard. Philadelphia, PA: Temple University Press, 1998: 1-12.
- Gellerman, Bruce. “Seattle Food Forest: An Interview with Jenny Pell.” *Living on Earth* 9 March 2012 <http://www.loe.org/shows/segments.html?programID=12-P13-00010&segmentID=7#.T1rxxFurUnY.twitter>
- Gilmore, Ruth “Fatal Couplings of Power and Difference: Notes on Racism and Geography.” *The Professional Geographer* Vol. 54, No. 1 (2010).
- Gobster, Paul H. “Introduction: Restoring Nature: Human Actions, Interactions, and Reactions,” in *Restoring Nature: Perspectives from the Social Sciences and Humanities*. Washington DC: Island Press, 2000: 1-19.

- Gore, Al. *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It*. Emmaus, PA: Rodale, 2006.
- . *Earth In the Balance: Ecology and the Human Spirit*. New York: Rodale, Inc. 2006.
- . *Our Choice: A Plan to Solve the Climate Crisis*. Emmaus, PA: Rodale Books, 2009.
- Gore, Al and Guggenheim, David (dir). *An Inconvenient Truth*. Paramount Entertainment, 2006. Film.
- Gottlieb, Robert and Joshi, Anupama. *Food Justice*. Cambridge, MA: MIT Press, 2010.
- Gross, Matthais. *Ignorance and Surprise: Science, Society, and Ecological Design*. Cambridge, MA: The MIT Press, 2010.
- Hall, Marcus. *Earth Repair: A Transatlantic History of Environmental Restoration*. Charlottesville, VA: University of Virginia Press, 2005.
- Haraway, Donna. *The Companion Species Manifesto: Dogs, People, and Significant Otherness*. Chicago, IL: Prickly Paradigm Press, 2003.
- . *The Haraway Reader*. New York, NY: Routledge, 2004.
- . *Modest Witness@Second Millennium.FemaleMan© Meets OncoMouse™: Feminism and Technoscience*. New York, NY: Routledge, 1997.
- . *Simians, Cyborgs and Women*. New York, NY: Routledge, 1991.
- . *When Species Meet*. Minneapolis, MN: University of Minnesota Press, 2008.
- Harding, Sandra. “Rethinking Standpoint Epistemology: What is ‘Strong Objectivity’?” in *Feminist Epistemologies* Eds. Linda Alcoff & Elizabeth Potter. New York: Routledge, 1992: 49-82.
- Harris, James; Hobbs, Richard; Higgs, Eric; Aronson, James. “Ecological Restoration and Global Climate Change.” *Restoration Ecology* Vol. 14, Iss. 2 (2006): 170-176.
- Harrison, Margaret. Personal Interview. 28 August 2014.

- Harm Benson, Melinda, and Craig, Robin K. "The End of Sustainability: The Realities of the Anthropocene Demand a New Approach to Environmental Governance." *Enzia* 8 July, 2014. <http://ensia.com/voices/the-end-of-sustainability/>
- Hartmann, Betsy. "The Great Distraction: 'Overpopulation' Is Back in Town" *Common Dreams* 30 August, 2011. <http://www.commondreams.org/view/2011/08/30-1>
- Hekman, Susan. "Constructing the Ballast: An Ontology for Feminism," in *Material Feminisms*. Eds. Stacy Alaimo & Susan Hekman. Bloomington, IN: Indiana UP, 2009: 85-119.
- Helford, Reid M. "Constructing Nature as Constructing Science: Expertise, Activist Science, and Public Conflict in the Chicago Wilderness," in *Restoring Nature: Perspectives from the Social Science and Humanities*. Eds. Paul H. Gobster and R. Bruce Hull. Washington D.C.: Island Press, 2000 (119-142).
- Herlihy, Glenn. Personal Interview. 28 August 2013.
- Hettinger, Ned. "Nature Restoration as a Paradigm for the Human Relationship with Nature," in *Ethical Adaptation to Climate Change: Human Virtues of the Future*. Eds. Allen Thompson and Jeremy Bendik-Keymer. Cambridge, MA: MIT Press, 2012: 27-46.
- Hilton, Charlie. "Seattle's Beacon Food Forest is the Next Step in Urban Agriculture." *Urban Times* 5 February, 2014. <http://urbantimes.co/2014/02/seattle-urban-agriculture-design/>
- Hirsch, Paul D. and Norton, Bryan G. "Thinking Like a Planet," in *Ethical Adaptation to Climate Change: Human Virtues of the Future*. Eds. Allen Thompson and Jeremy Bendik-Keymer. Cambridge, MA: MIT Press, 2012: 317-334.
- Hobbs, Richard J., Higgs, Eric S. and Hall, Carol M. "Defining Novel Ecosystems" in *Novel Ecosystems: Intervening in the New Ecological World Order*. Eds. Richard J. Hobbs, Eric S. Higgs, and Carol M. Hall. Hoboken, NJ: Wiley Blackwell, 2013: 58-60.
- . "Introduction: Why Novel Ecosystems?" in *Novel Ecosystems: Intervening in the New Ecological World Order*. Eds. Richard J. Hobbs, Eric S. Higgs, and Carol M. Hall. Hoboken, NJ: Wiley Blackwell, 2013: 3-8.
- . "What Do We Know About, and What Do We Do About, Novel Ecosystems?" in *Novel Ecosystems: Intervening in the New Ecological World Order*. Eds. Richard J. Hobbs, Eric S. Higgs, and Carol M. Hall. Hoboken, NJ: Wiley Blackwell, 2013: 353-360.

- Holt-Giménez, Eric and Patel, Raj. *Food Rebellions! Crisis and the Hunger for Justice*. Oakland, CA: Food First Books, 2009.
- Hull, Bruce R. and Robertson David P. "The Language of Nature Matters: We Need a More Public Ecology," in *Restoring Nature: Perspectives from the Social Sciences and Humanities*. Washington DC: Island Press, 2000: 97-118.
- . "Which Nature?" in *Restoring Nature: Perspectives from the Social Sciences and Humanities*. Washington DC: Island Press, 2000: 299-307.
- Hustad, Kristofor. "Seattle's First Urban Food Forest Will Be Open to Foragers." *National Public Radio: The Salt* 1 March, 2012 .
<http://www.npr.org/blogs/thesalt/2012/02/29/147668557/seattles-first-urban-food-forest-will-be-free-to-forage>
- Ingram, Mrill. "Practicing Ecological Restoration: Climate Change in Context." *Ecological Restoration* Vol. 27, No. 3 (2009): 235-237.
- Interchange Media. "Beacon Food Forest." *Vimeo* <http://vimeo.com/43583846#>
- Isla, Ana. "Who Pays for the Kyoto Protocol?" in *Eco-Sufficiency and Global Justice: Women Write Political Ecology*, ed. Ariel Salleh. New York, NY: Pluto Press, 2009: 199-217.
- Jensen, Derrick. "Forget Shorter Showers: Why Personal Change Does Not Equal Political Change." *Orion Magazine* 8 July, 2009.
- Jordan, William. *The Sunflower Forest: Ecological Restoration and the New Communion with Nature*. Berkeley, CA: University of California Press, 2003.
- . "Restoration, Community, and Wilderness," in *Restoring Nature: Perspectives from the Social Sciences and Humanities*. Washington DC: Island Press, 2000: 23-36.
- & Lubick, George. *Making Nature Whole: A History of Ecological Restoration*. Washington DC: Island Press, 2011.
- Katz, Marisa. "Recognition of Isle De Jean Charles as a Native American Tribe." *Race, Racism and the Law: Speaking Truth to Power!*
<http://academic.udayton.edu/race/02rights/native17.htm>
- Kirby, Vicky. "Natural Convers(at)ions: or, What if Culture Was Really Nature All Along?" in *Material Feminisms*. Eds. Stacy Alaimo & Susan Hekman. Bloomington, IN: Indiana UP, 2009: 214-236.

- Klimaforum. "People's Declaration: System Change, Not Climate Change." November, 2010. <http://declaration.klimaforum.org/>
- Kristof, Nicholas D. "The Big Melt." *New York Times* 16 August, 2007. <http://query.nytimes.com/gst/fullpage.html?res=F70715FC3E5B0C758DDDA10894DF404482>
- Lahar, Stephanie. "Roots: Rejoining Natural and Social History," in *Ecofeminism: Women, Animals, Nature*. ed. Greta Gaard. Philadelphia, PA: Temple UP, 1993: 91-117.
- Leopold, Aldo. *A Sand County Almanac*. New York, NY: Ballantine Books, 1986.
- Leschin-Hoar, Clare. "It's Not a Fairytale: Seattle to Build Nation's First Food Forest." *Take Part* 21 February, 2012 <http://www.takepart.com/article/2012/02/21/its-not-fairytale-seattle-build-nations-first-food-forest>
- Light, Andrew. "The Death of Restoration?" in *Ethical Adaptation to Climate Change: Human Virtues of the Future*. Eds. Allen Thompson and Jeremy Bendik-Keymer. Cambridge, MA: MIT Press, 2012:105-121.
- Light, Andrew, Thompson, Allen, and Higgs, Eric S. "Valuing Novel Ecosystems," in *Novel Ecosystems: Intervening in the New Ecological World Order*. Eds. Richard J. Hobbs, Eric S. Higgs, and Carol M. Hall. Hoboken, NJ: Wiley Blackwell, 2013: 257-268.
- Lohmann, Larry, ed. *Carbon Trading: A Critical Conversation of Climate Change, Privatisation and Power*. Uddevalla, Sweden: Mediaprint, 2006.
- Luke, Timothy W. "The Politics of True Convenience or Inconvenient Truth: Struggles Over How To Sustain Capitalism, Democracy, and Ecology in the 21st Century." *Environment and Planning* Vol. 40 (2008): 1811-1824.
- Lupo. "Title nf." *Food First!* <http://www.foodfirst.org/en/Seattle+food+forest>
- Marsh, George Perkins. *Man and Nature*. Seattle, WA: University of Washington Press, 1864.
- Marx, Rebecca Flint. "In Seattle's Beacon Hill Neighborhood, a Garden of Eden is Growing." *Modern Farmer* 18 June, 2013. <http://modernfarmer.com/2013/06/beacon-food-forest/>

- McDonnell. "Proof That Human Actions Can and Do Reduce Global Warming," *Slate* 17 November, 2013.
http://www.slate.com/articles/health_and_science/climate_desk/2013/11/montreal_protocol_climate_change_decrease_in_ozone_depleting_cfc_minimized.html
- McKibben. "Can China Go Green?" *National Geographic* June, 2011
<http://ngm.nationalgeographic.com/2011/06/green-china/mckibben-text>
- . *Eaarth: Making Life on a Tough New Planet*. New York, NY: St. Martin's Press, 2011.
- . *The End of Nature*. New York, NY: Random House, 1989.
- McWhorter, Ladelle. *Bodies and Pleasures: Foucault and the Politics of Sexual Normalization*. Bloomington IN: Indiana UP, 2009.
- MacGregor, Sherilyn. "Only Resist: Feminist Ecological Citizenship and the Post-Politics of Climate Change." *Hypatia* Vol.29, No. 3 (2014): 617-633.
- Merchant, Carolyn. "Dominion Over Nature," in *The Gender and Science Reader*. Eds. Muriel Lederman and Ingrid Bartsch. New York, NY: Routledge, 2001: 68-81.
- Messenger, Stephen. "Seattle to Create Nation's Largest Public Food Forest." *Treehugger* 28 February, 2012. <http://www.treehugger.com/culture/seattle-build-nations-biggest-public-food-forest.html>
- Nash, Roderick. *Wilderness and the American Mind*. New Haven: Yale UP, 1967.
- National Wildlife Conservation Organization. "Ecosystem Services." <http://www.nwf.org/Wildlife/Wildlife-Conservation/Ecosystem-Services.aspx>.
- Nayak, Nalini. "Development for Some is Violence for Others," in *Eco-Sufficiency and Global Justice: Women Write Political Ecology*, ed. Ariel Salleh. New York, NY: Pluto Press, 2009: 109-120.
- Nordhaus, Ted and Shellenberger, Michael. *Break Through: Why We Can't Leave Saving the Planet to Environmentalists*. New York: Mariner Books, 2009.
- Palamar, Colette R. "The Justice of Ecological Restoration." *Human Ecology Review* Vol. 15, No. 1 (2008): 82-94.
- . "Restorashyn: Ecofeminist Restoration." *Environmental Ethics* Vol. 26 (2006): 285-301.

- Pell, Jenny. Personal Interview. 22 August 2013.
- Pernitz, Sandy. Message to author. 7 July 2014. E-mail.
- Perring, Michael O. and Ellis, Erle C. "The Extent of Novel Ecosystems: Long in Time and Broad in Space," in *Novel Ecosystems: Intervening in the New Ecological World Order*. Eds. Richard J. Hobbs, Eric S. Higgs, and Carol M. Hall. Hoboken, NJ: Wiley Blackwell, 2013: 66-80.
- Polk, Danne. "Ecologically Queer: Preliminaries for a Queer Ecofeminist Identity Theory." *The Journal of Women and Religion* Vol 19/20 (2003): 72-89.
- Pollan, Michael. "Against Nativism." *The New York Times* 15 May 1994: A52.
- Psaki, Kristen. "First U.S. Climate Refugees." *Huffington Post*. 4 April, 2011. http://www.huffingtonpost.com/kristen-psaki/first-us-climate-refugees_b_844656.html
- Ragoff, Joe. "Label GMOs: Yes on Washington's 522." *Whole Story: The Official Whole Foods Market Blog*. 23 August, 2013. http://www.wholefoodsmarket.com/blog/label-gmos-yes-washingtons-522?_federated=1
- Reddington, Madeline. "Food Forest in the City: Seattle's Beacon Hill Begins a Radical Experiment with Common Space." *Arcade* 3 April, 2014 <http://arcadenw.org/article/food-forest-in-the-city>
- Salleh, Ariel, ed. *Eco-Sufficiency and Global Justice: Women Write Political Ecology*. New York: Pluto Press, 2009.
- Sandler, Ronald. "Global Warming and Virtues of Ecological Restoration," in *Ethical Adaptation to Climate Change: Human Virtues of the Future*. Eds. Allen Thompson and Jeremy Bendik-Keymer. Cambridge, MA: MIT Press, 2012: 63-79.
- Sandoval, Chela. *Methodology of the Oppressed*. Minneapolis, MN: University of Minnesota Press, 2000.
- Scheman, Naomi. "Empowering Canaries: Sustainability, Vulnerability, and the Ethics of Epistemology." *International Journal of Feminist Approaches to Bioethics* Vol. 7, Iss. 1 (2014): 169-191.

- Schiller, Ben. "Seattle's Urban Food forest is Open for Foraging." *Co.Exist*. 11 June, 2013. <http://www.fastcoexist.com/1682269/seattles-urban-food-forest-is-open-for-foraging>
- Schroeder, Herbert W. "The Restoration Experience: Volunteers' Motives, Values, and Concepts of Nature, in *Restoring Nature: Perspectives from the Social Sciences and Humanities*. Washington DC: Island Press, 2000: 247-264.
- Seager, Joni. "Death by Degrees: Taking a Feminist Hard Look at the 2° Climate Policy." *Women, Gender & Research* No. 3 (2009): 11-21.
- . "Rachel Carson Died of Breast Cancer: The Coming Age of Feminist Environmentalism." *Signs* Vol. 28, No. 1 (2003): 945-972.
- Seattle Department of Neighborhoods. "P-Patch Community Gardens." *Seattle.gov* <http://www.seattle.gov/neighborhoods/ppatch/>
- Seattle Parks and Recreation. "Beacon Food Forest Project Information." *Seattle.gov* http://www.seattle.gov/parks/projects/jefferson/food_forest.htm
- Shaefer, Valentin. "Alien Invasions, Ecological Restoration in Cities and the Loss of Ecological Memory." *Restoration Ecology* Vol. 17, No. 2 (2009): 171-176.
- Shiebinger, Londa. "Feminist History of Colonial Science." *Hypatia* Vol. 19, No. 1 (2004): 233-254.
- Shiva, Vandana. "Climate Change and Agriculture," in *The Global Warming Reader*. Ed. Bill McKibben. New York, NY: OR Books, 2011: 365-370.
- Shiva, Vandana. *Earth Democracy: Justice, Sustainability, and Peace*. Cambridge, MA: South End Press, 2005.
- . "The Injustice of Carbon Offsets." *CommonDreams.Org* 18 September, 2009 www.commondreams.org/view/2009/09/18-9
- . *Soil Not Oil: Environmental Justice in an Age of Climate Crisis*. Cambridge, MA: South End Press, 2008.
- . *Staying Alive: Women, Ecology and Development*. London: Zed Books, 1989.
- Simon, Darren. "Tribal Chief on Isle de Jean Charles Says It's Time to Leave." *Nola.com*. 21 September, 2008. http://www.nola.com/news/index.ssf/2008/09/tribal_chief_on_isle_de_jean_c.htm

- Simpson, Thomas. "Old Nature, New Nature: Global Warming and Restoration." *Ecological Restoration* Vol. 27, No. 3 (2009): 343-344.
- Smolker, Rachel and Houser, Gary. "Carbon Trading Nonsense." *CommonDreams.Org* 11 January, 2010 www.commondreams.org/view/2010/01/11
- Society for Ecological Restoration. "Restoration Project Showcase." <http://ser.org/restorations/restorations-list-view>
- Steady, Filomena Chioma. "Environmental Justice Cross-Culturally: Theory and Praxis in the African Diaspora and in Africa," in *Environmental Justice in the New Millennium: Global Perspectives on Race, Ethnicity and Human Rights*. Ed. Filomena Chioma Steady. New York, NY: Palgrave MacMillan, 2009: 17-46.
- Sturgeon, Noël. *Ecofeminist Natures: Race, Gender, Feminist Theory and Political Action*. New York: Routledge, 1997.
- . *Environmentalism in Popular Culture: Gender, Race, Sexuality, and the Politics of the Natural*. Tucson, AZ: The University of Arizona Press, 2009.
- Slocum, Rachel. "Polar Bears and Energy-Efficient Light Bulbs: Strategies to Bring Climate Change Home." *Environment and Planning: Society and Space* Vol. 22 (2004): 413-438.
- Standish, Rachel J., Thompson, Allen, Higgs, Eric S. and Murphy, Stephen D. "Concerns About Novel Ecosystems," in *Novel Ecosystems: Intervening in the New Ecological World Order*. Eds. Richard J. Hobbs, Eric S. Higgs, and Carol M. Hall. Hoboken, NJ: Wiley Blackwell, 2013: 296-309.
- Starzomski, Brian M. "Novel Ecosystems and Climate Change," in *Novel Ecosystems: Intervening in the New Ecological World Order*. Eds. Richard J. Hobbs, Eric S. Higgs, and Carol M. Hall. Hoboken, NJ: Wiley Blackwell, 2013: 88-101.
- Stone, Dan. "Seattle's Free Food Experiment." *National Geographic*. 29 April, 2013. <http://newswatch.nationalgeographic.com/2013/04/29/seattles-free-food-experiment/>
- Subramaniam, Banu. "The Aliens Have Landed! Reflections on the Rhetoric of Biological Invasions," in *Making Threats: Biofears and Environmental Anxieties*. eds. Betsy Hartmann, Banu Subramaniam, & Charles Zerner. Oxford: Rowman & Littlefield Publishers, Inc., 2005: 135-148.

- Tabafunda, James. "Beacon Hill District: Emerald City's Unofficial Center for Green Thumbs." *Northwest Asian Weekly*. 21 April, 2011. <http://www.nwasianweekly.com/2011/04/beacon-hill-district-emerald-city's-unofficial-center-for-green-thumbs/#more-12180>
- Taylor, Kevin. "Will an Apple a Day Keep the Food Desert Away?" *High Country News: HCN's Special Issue on the Future* (2013): 12-13. <http://edition.pagesuite-professional.co.uk/launch.aspx?eid=f0835b41-7faa-48b3-9055-ac8d9b32b15b>
- Thompson, Claire. "Into the Woods: Seattle Plants a Public Food Forest." *Grist*. 28 February 2012. <http://grist.org/urban-agriculture/into-the-woods-seattle-plants-a-public-food-forest/>
- Throop, William M. "Environmental Virtues and the Aims of Restoration," in *Ethical Adaptation to Climate Change: Human Virtues of the Future*. Eds. Allen Thompson and Jeremy Bendik-Keymer. Cambridge, MA: MIT Press, 2012: 47-62.
- Tokar, Brian. *Earth for Sale: Reclaiming Ecology in the Age of Corporate Greenwash*. Boston, MA: South End Press, 1997.
- . *Toward Climate Justice: Perspectives on the Climate Crisis and Social Change*. Norway: Communalism Press, 2010.
- Toon, Anna. "The Way of the 'Food Forest'." *The Austin Chronicle*. 14 February, 2014. <http://www.austinchronicle.com/news/2014-02-14/the-way-of-the-food-forest/>
- Tuana, Nancy. "Viscous Porosity: Witnessing Katrina," in *Material Feminisms*, eds. Stacy Alaimo and Susan Hekman. Bloomington, IN: Indiana UP, 2008:188-213.
- United Nations. "Reducing Emissions from Deforestation and Forest Degradation." www.un-redd.org
- United Nations Conference on Trade and Development. "Trade and Environment Review 2013: Wake Up Before It's Too Late." http://unctad.org/en/PublicationsLibrary/ditcted2012d3_en.pdf
- United Nations General Assembly Human Rights Council. "Report of the Special Rapporteur on the right to food, Olivier De Schutter: The transformative potential of the right to food." 24 January, 2014. <http://www.ohchr.org/en/HRBodies/HRC/RegularSessions/Session25/Pages/ListReports.aspx>
- University of Wisconsin Madison Botany. "Arboretum Leaflets: Curtis Prairie: 75-Year-

Old Restoration Research Site.”
http://botany.wisc.edu/zedler/images/Leaflet_16.pdf

United States Department of Agriculture Economic Research Service. “Food Access Research Locator.” http://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas.aspx#.U_TQv1ZZYds

Warren, Karen. *Ecofeminist Philosophy: A Western Perspective of What It Is and Why It Matters*. Lanham, MD: Rowman and Littlefield Publishers, 2000.

Wikipedia. “Jefferson Park (Seattle).”
[http://en.wikipedia.org/wiki/Jefferson_Park_\(Seattle\)](http://en.wikipedia.org/wiki/Jefferson_Park_(Seattle))

Williams, David B. *The Street-Smart Naturalist: Field Notes From Seattle*. Portland, OR: West Winds Press, 2005.

Woodruff, Bob. “Louisianans Watch Native Land Sinking Into Sea.” *ABC News* 6 December, 2009. <http://abcnews.go.com/US/isle-de-hean-charles-louisiana-threatened-sea-floodwaters/story?id=9263544#.TtK4t2BuGsl>