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Tracing Rhetoric and Material Life

Ecological Approaches

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CHAPTER 10

The Most Nuclear-Bombed Place: Ecological Implications of the US Nuclear Testing Program

Danielle Endres

The American West is the most nuclear-bombed place in the world. Although only two nuclear bombs have been used in warfare—devastating Hiroshima and Nagasaki, Japan, in August 1945—there have been over 2000 nuclear weapons detonated in tests conducted by eight countries over seventy-one years across the globe, with the largest concentration of tests located in the American West.[1] While the US conducted 1054 nuclear tests in the Marshall Islands, Alaska, Nevada, Colorado, Mississippi, and New Mexico over a fifty-year period as part of the US Nuclear Weapons Testing Program, the vast majority (928) of those explosions occurred between 1951 and 1992 at the Nevada Test Site, primarily at Frenchman Flat and Yucca Flat.[2] Although none of these tests matched the death and destruction inflicted by Fat Man and Little Boy on the citizens of Japan, the cumulative effects of nuclear testing in the American West, and globally, have exacted other forms of death

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and destruction, not just to people and cities but also to the earth's ecosystem.

Nuclear testing—one consequence of the Pandora's box opened by the development of nuclear weapons—exemplifies the Anthropocene. The Anthropocene is a new planetary era, as evidenced in geological record, that expresses the impact human technology has had on global ecological systems. Some researchers have argued that the first nuclear bomb tested on July 16, 1945 in Alamogordo, New Mexico was the start of the Anthropocene.[3] Global radioactive fallout from over 2000 nuclear bomb tests—not to mention the stockpiles of undetonated nuclear weapons, the nuclear waste at nuclear weapons production facilities such as Hanford, and other traces from the global nuclear weapons production process—have left a geographic mark that will be detectable for millennia. This imprint reflects the increase in radioactive elements such as cesium-137 (no known natural sources) and plutonium-239 and 240 (only exist in trace amounts naturally). Although this stain on the earth's ecosystem is spread across the globe, the people, flora, and fauna of the American West have been disproportionately affected by nuclear weapons testing.[4]

The Nevada Test Site (NTS) was originally occupied by nomadic bands of Western Shoshone and Southern Paiute people, who still claim treaty-based ancestral rights to the land.[5] Many Shoshone and Paiute people had moved to nearby cities or were forcibly relocated to reservations in the early twentieth century before the land was first appropriated by the federal government to form the Las Vegas Bombing and Gunnery Range in 1940, and later the NTS in 1951.[6] Yet, according to a consortium of Western Shoshone and Southern Paiute tribes and organizations, "For many centuries, the [NTS] area has been a central place in the lives of American Indian tribes, continuously used by these tribes from antiquity to contemporary times."[7] Further, Western Shoshone and Southern Paiute governing councils, organizations, and people have actively resisted the federal government's jurisdiction over, and use of, the NTS.[8]

The NTS is approximately 1375 square miles of desert basin and range terrain that is part of what is called a "transitional zone between the Great Basin and Mojave deserts."[9] Although the NTS is a rich desert ecology inhabited by a robust diversity of human and more-than-human life, the US federal government justified locating the nation's test site there because "few areas of the continental United States are more ruggedly severe and as inhospitable to humans" and "although no locale can be said to be ideal or optimal for nuclear weapons testing, the Nevada Test Site was perhaps the best continental site available for avoiding collateral damage and radiation exposure to plants, animals, and, most importantly, human beings off site."[10] This logic assumes that nuclear weapons testing had to happen *somewhere*. That somewhere, wherever it was, would ideally minimize the amount of harm from nuclear weapon tests, but would not be immune from harm.

As the most nuclear-bombed place in the world, the NTS is a site of violence; it is a place where 928 nuclear bombs exploded. This legacy is visually apparent in aerial photos of a pockmarked landscape full of craters, one of which is enormous at a depth of 320 feet (for comparison, this would be the equivalent of a 20 or 25 stories high-rise building). This legacy can also be seen in the destructive material consequences of nuclear weapons on the local (and global) ecology.[11] The nuclear bombs exploded at the NTS not only contributed to illness and, in some cases, death to human bodies (including both NTS workers and downwinders) but also to the many more-than-human bodies inhabiting the NTS, especially those who happened to be at one of the many ground zero sites at the moment of nuclear detonation.[12] As such, the NTS is what environmental justice scholars call a national sacrifice zone, meaning it is a place that is set aside to be sacrificed to serve the broader interests of the nation, in this case national security during the Cold War.[13] The often-touted legacy of the Cold War, of which nuclear testing was a part, is that it prevented World War III. However, as downwinder Mary Dickson has explained, the Cold War can also be seen as an "undeclared war" on the people, the flora and fauna, the land, and the ecology of the American West.[14]

The violence at the Nevada Test Site can be explained through nuclear colonialism, a complex phenomenon within which indigenous people across the globe are disproportionately affected by the negative consequences of the nuclear production process from cradle to grave.[15] Scholars have examined nuclear colonialism in the context of the American West through studies of uranium mining, nuclear weapons production, nuclear weapons testing, and nuclear waste storage on or near Native American lands.[16] In this chapter I expand the concept of nuclear colonialism to account for its relationship with the more-than-human world. I argue that the Nevada Test Site is a colonized place wherein the entire ecological community—humans, animals, plants, soil, and water—is disproportionately affected by its interaction

with nuclear weapons tests performed in the service of human national security. In extending the concept of nuclear colonialism to the more-than-human world, this chapter points to the material damage to animate and sensing beings that make up that more-than-human land community at the Nevada Test Site (and beyond, considering that radiation released from nuclear testing was not contained by the boundaries of the NTS). Furthermore, to avoid viewing the more-than-human land community as only an inert victim of nuclear colonialism, this extension also acknowledges the active role that more-than-human beings play within nuclear colonialism as a complex phenomenon of relations, and rhetorical practices, between humans, more-than-humans, and the nuclear production process. Extending nuclear colonialism to include more-than-human beings approaches the concept from a more ecological standpoint. By ecological (and by extension ecology), I am referring to the interrelationship and co-existence of beings and matter within the earth.[17] A more ecological standpoint on nuclear colonialism is concerned with not only cataloguing the environmental and human health implications of nuclear technologies but also with thinking about nuclear colonialism as a material-discursive phenomenon that highlights the interconnectivity and intersubjectivity between humans, more-than-human beings, land communities, and nuclear technologies.

Nuclear colonialism is, in part, rhetorical. I seek to highlight the role of rhetoric in the ongoing constitution of nuclear colonialism. While traditional theories of rhetoric assume that it is a human faculty, thinking about nuclear colonialism in relation to the more-than-human world relies on emerging theories of material rhetoric that not only acknowledge the material consequences of rhetoric, but also understand how places, more-than-human beings, and things are capable of rhetoric.[18] I rely on Natasha Seegert's definition of rhetoric as "the relational force of signals interacting with the world," which expands rhetoric to the more-than-human world by including "beings who surround us but who are frequently silenced."[19] This definition of rhetoric makes room for both discursive and material signals in a "world already speaking through affective networks of connection."[20] Critics can access these rhetorics by focusing on rhetorical performances and practices, as well as on the consequences, or force, of rhetorical dissemination. As this chapter will elaborate, nuclear colonialism entails a range of rhetorics—both in the sense of patterns of discourse with material consequences and forms of non-discursive material rhetoric—that justify, perpetuate, and challenge

the practices of colonialism that underlie the nuclear production process. Instead of separating material and discursive forms of rhetoric, I view rhetoric as encompassing inextricably related material and discursive elements, as indicated by the imperfect term material-discursive. In other words, nuclear colonialism is a material-discursive phenomenon comprised by a variety of material and discursive, human and more-than-human rhetorics.

In the remainder of the chapter, I begin by developing my argument for expanding nuclear colonialism to the more-than-human world. Then I examine how this expanded notion of nuclear colonialism can be seen through an analysis of the Nevada Test Site as a place with rich rhetorical relations. In particular, I examine how characterizations of the NTS as a wasteland articulate with nuclear colonialism and open opportunities for material-discursive rhetorical resistance. The chapter concludes by considering implications for taking an ecological approach to nuclear colonialism.

Nuclear Colonialism

Nuclear colonialism is a material-discursive phenomenon that describes the power dynamics and interrelationships between indigenous peoples and the global nuclear production complex. Ward Churchill and Winona LaDuke first used the term "radioactive colonization" in their description of the disproportionate harms experienced by Native Americans and other indigenous groups as a result of the cradle to grave cycle of nuclear production.[21] The term, and its variant nuclear colonialism, has proliferated among indigenous activists and scholars.[22] According to the Indigenous Environmental Network:

> The nuclear industry has waged an undeclared war against our Indigenous peoples and Pacific Islanders that has poisoned our communities worldwide. For more than 50 years, the legacy of the nuclear chain, from exploration to the dumping of radioactive waste has been proven, through documentation, to be genocide and ethnocide and a deadly enemy of Indigenous peoples…United States federal law and nuclear policy has not protected Indigenous peoples, and in fact has been created to allow the nuclear industry to continue operations at the expense of our land, territory, health and traditional ways of life…This disproportionate toxic burden—called environmental racism—has culminated in the current

attempts to dump much of the nation's nuclear waste in the homelands of the Indigenous peoples of the Great Basin region of the United States.[23]

Governments pursuing nuclear technologies justify sacrificing the sovereignty, land, and health of indigenous people in the interests of national security or the national interest. Nuclear colonialism in the US is embedded within a larger system of settler colonialism, wherein a population colonizes by taking over the land-base of an indigenous population and subjecting that population to a domestic-dependent relationship with the colonizer.[24] Nuclear colonialism relies on the intersections of settler colonialism and nuclearism.[25] It is a form of environmental injustice, but a unique form that takes into account Native American people's sovereignty and ongoing colonization.[26] Nuclear colonialism is also a form of violence, in its intersecting material-discursive sense. Nuclearism and colonialism in the US include instances of extreme physical violence (Indian wars and nuclear bombs), more subtle forms of incremental slow violence (slow-developing illnesses, such as diabetes and cancer), and psychological violence (colonization of the mind, assimilation, fear of nuclear threats).[27] These forms of violence are experienced through bodies, minds, and places. For example, the 928 nuclear bombs detonated at the NTS not only contributed to illness and, in some cases, death to people's bodies (from NTS workers to downwinders)[28] but also took a toll on indigenous peoples' sense of identity, culture, and place.[29] Nuclear colonialism is a material-discursive phenomenon in which the lived experiences, violence, and injustices of nuclear colonialism are inherently both material and discursive.

Extending Nuclear Colonialism to the Rhetorical

My previous research intervenes in the literature on nuclear colonialism by highlighting the specifically *rhetorical* elements of nuclear colonialism, describing how nuclear colonialism could not happen without extensive and complex systems of rhetorical justification.[30] Much of the research on nuclear colonialism focuses on demonstrating that the nuclear production complex has had a disproportionate burden on indigenous people—that is, this research provides geographical, empirical, and archival evidence which establishes that there is a verifiable pattern of disproportionate harm to indigenous populations from the nuclear production process. Yet there has been less emphasis in this research

on the role of rhetoric in perpetuating, justifying, and resisting nuclear colonialism. These rhetorical practices are constrained and enabled by what Foucault described as a *discursive formation*, which is a pattern of discourse across a variety of discrete texts or statements that reflects regimes of power/knowledge.[31] My previous work focuses on articulating the rhetorical strategies and tactics within this discursive formation and responds to what I saw as a limitation in analyses of nuclear colonialism that lack sustained focus on the rhetorical and discursive aspects of nuclear colonialism.[32] In doing so, it shines a light on the rhetorical elements of nuclear colonialism while acknowledging that nuclear colonialism is not only a rhetorical phenomenon. This previous research relies on a more traditional definition of rhetoric—as a symbolic human practice—than the one I presented above. Further, although I noted above that nuclear colonialism is a material-discursive phenomenon, my previous research maintains a distinction between discursive and material elements by focusing primarily on illuminating one over the other— the rhetorical over the material. In the next two sections, I propose two interrelated interventions into current conceptualizations of nuclear colonialism that seek to better account for nuclear colonialism as an integrated material-discursive phenomenon within which human and nonhuman, material and discursive rhetorics circulate. First, I expand nuclear colonialism beyond the human by examining how the more-than-human land community is affected by, implicated in, and engaged in resistance to nuclear colonialism. Second, to account for the rhetorics of the more-than-human land community in the nuclear colonialism material-discursive formation, I continue in a line of scholars who seek to more fully account for the (rhetorical) agency of the material.[33]

Extending Nuclear Colonialism to the More-than-Human Land Community

Nuclear colonialism is usually conceptualized in terms of the human; it is perpetuated by human institutions, such as the federal government or members of the military industrial complex, and negatively experienced by particular groups of indigenous humans, Western Shoshone and Southern Paiute people in the case of nuclear testing at the NTS. Yet it is possible and desirable to extend the concept from its focus on the human to a focus on how an entire ecological community participates in

nuclear colonialism, seeing more-than-human beings as possible agents, victims, resistors, and contributors. Doing so shifts attention to the many ways that nuclear colonialism, as a material-discursive phenomenon, is embedded with, produced by, and entails integrated repercussions on the *more-than-human land community* of animals (including humans), soils, plants, and water.[34] In the case of nuclear weapons testing at the NTS, expanding nuclear colonialism from a human to a more-than-human framework calls our attention to how this most nuclear-bombed place reveals a web of material-discursive ecological relations.

A more-than-human land community is an ecological concept for describing dynamic, animate, interactive places, ranging in scale from the local to the global.[35] The term describes earthen locations and all of the beings and processes that interanimate with them. Although many readers will recognize the term *more-than-human land community* as an amalgamation of Aldo Leopold and David Abram's thinking, and other readers will contemplate its resonance with new materialism's focus on non-human agency, I seek to highlight the term's indebtedness to and articulation with indigenous knowledges.[36,37] Native American scholars such as Vine Deloria, Jr. (Dakota), Jace Weaver (Cherokee), Greg Cajete (Tewa), and Megan Bang (Ojibwe) describe how both traditional and contemporary beliefs and practices across a variety of distinct Native American and pan-Native American cultures are characterized by ecological relationships with the land that acknowledge the agency and animus of non-human participants.[38] Realist animism and spiritual ecology recognize the possibility of participatory relationships between human beings and other beings.[39] For Abram, the term more-than-human world explains the animate and sensual qualities of everything that makes up a place: animals (including humans), lands, rocks, water, and air. The more-than-human world is capable of engaging in intersubjective relationships.[40] Cajete argues that this sort of intimate relationship between beings is at the core of many Native American spiritualities; it is "the essence of their survival and identity as people," recognizing that this plays out differently across the more than 500 Native American nations in the US.[41] These indigenous knowledges are expressed as "kinship with the land, its climate, soil, water, mountains, lakes, forests, streams, plants, and animals."[42] The notion of kinship with the land opens the possibility of thinking of land as a community. Leopold's land ethic "enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land."[43] Nils Peterson, Markus Peterson, and Tarla Rai Peterson use the term land community to suggest a place or means through which intersubjective relationships between human and more-than-human beings can occur. They write, "Leopold's land community is a society of interdependent human and extrahuman citizens that participate in decision-making and exercise other rights of citizenship."[44] I argue that a more-than-human land community draws on indigenous ecological knowledge to understand place as a dynamic community of intersubjective, sensing, and agential beings.

A more-than-human land community has the capability to engage in rhetoric, even though these rhetorical practices may be inaccessible, undetectable, or foreign to some human beings. This capability might be termed material rhetoric. As the editors and authors in this volume demonstrate, material rhetoric takes on a variety of meanings in the field. In this case, the animate nature of the more-than-human land community cues into defining material rhetoric as the non-discursive signals disseminated by the more-than-human world that Seegert terms *animate rhetoric*.[45] In his articulation of a materialist transhuman dialogic theory of communication, Richard Rogers asks, "We are very willing to talk about how discourse affects nature, but what about how nature affects discourse, and therefore, *us*?"[46] This reflects Rogers' critique of some early constitutive and materialist theories of rhetoric for ignoring the "natural material conditions within which we all exist—our physical bodies, geography, and climate," the agency of the more-than-human world, and the bidirectionality of communication.[47] The more-than-human land community concept assumes the possibility of communication between human and more-than-human beings. Yet, given the hierarchical dominance of human society and the difficulty many find in perceiving the animate more-than-human world, it is often up to human beings to "amplify and translate the voices of non-speaking human and extrahuman subjects."[48] In this case, this chapter is focused not only on how nuclear testing is a form of material-rhetorical violence that affects the entire more-than-human land community, but also on asking the question of what the legacy of the Nevada Test Site might be trying to tell us.

Before moving on, it is important to address how an extension of nuclear colonialism to the more-than-human land community could be perceived as problematic in relation to environmental justice and colonization. First, it could be argued that a move to de-center the human in nuclear colonialism represents a move toward the sort of mainstream environmentalism that environmental justice scholars have criticized

for being too focused on nature to the exclusion of social justice for humans.[49] In a tension that has existed since the beginning of the environmental justice movement, environmentalism has been accused of putting the needs of the natural world before those of people and environmental justice has been accused of putting the needs of people before the natural world.[50] Extending nuclear colonialism to include the more-than-human land community, then, might be seen as putting the needs of animals, plants, and other beings in the more-than-human land community over the needs of indigenous people. Yet, despite how this tension has played out in a variety of specific struggles, thinking ecologically about nuclear colonialism avoids an exclusive focus on either human or more-than-human, and, therefore, avoids the binary between the two. Indeed, some strains of environmental justice scholarship and activism see it as an inherently ecological approach.[51] For example, the Principles of Environmental Justice adopted in 1991 at the First National People of Color Environmental Leadership Summit invoke both ecological and indigenous knowledges that attempt to reconcile the needs of humans and the more-than-human world. The Principles offer injunctions to affirm "the sacredness of Mother Earth, ecological unity, and the interdependence of all species" and to responsibly use land "in the interest of a sustainable planet for humans and other living things."[52] These aspects of the founding principles of environmental justice not only reflect the involvement of indigenous people in their crafting, but also promote justice as a concept that can be applied to the entire more-than-human land community (as Leopold also attempted to do). Similarly, the concept of a more-than-human land community values forms of realist animism and spiritual ecology in a way that resists reductions to either human or more-than-human. Kyle Powys Whyte (Potowatami) suggests that to adequately recognize indigenous experience, environmental injustice must be conceptualized not just as disproportionate harm to indigenous people and their lands, but also as the erasure of indigenous ecological beliefs. He writes, "Settler colonialism can be interpreted as a form of environmental injustice that wrongfully interferes with and erases the socioecological contexts required for indigenous populations to experience the world as a place infused with responsibilities to humans, nonhumans and ecosystems."[53] Following Whyte, environmental justice should acknowledge the interconnection and interrelationships between human and more-than-human beings, and the importance of that interrelation

to indigenous people. It is in this spirit that I extend nuclear colonialism to the more-than-human land community.

Second, one might also argue that this extension dilutes colonialism and minimizes the unique experiences of human colonized subjects; accordingly, Eve Tuck and K. Wayne Yang argue that colonization is not a metaphor that can or should be extended broadly to explain all forms of oppression or social injustice.[54] Yet, it is possible to recognize settler colonialism as a system that links but does not equate the oppression experienced by indigenous people with that of more-than-human land communities. Indeed, Tuck and Yang argue that settler colonialism entails the management of "people, land, flora, and fauna" in the service of colonial power.[55] In this way, settler colonialism already includes consideration of the more-than-human land community. My approach does not see indigenous people as less-than-human nor does it promote the concerns of the more-than-human above those of indigenous people, but rather investigates the ways in which nuclear colonialism involves complex interrelations between human and more-than-human beings. Some of these complexities include the way in which indigenous peoples are disproportionately harmed by the nuclear production process *and* indigenous people are limited in their ability to experience the land as animate *and* other beings in the more-than-human land community are disproportionately harmed by the nuclear production complex. Nuclear colonialism, then, focuses on how the entire more-than-human land community (including human and more-than-human beings) experiences a place like the NTS in relation to colonial power and nuclearism.

A More Material Discursive Formation

Although previous research on nuclear colonialism has tended to highlight either its discursive elements or its material elements, this chapter seeks to analyze nuclear colonialism as a material-discursive phenomenon. Following Karen Barad, "*Phenomena*, according to my agential realist account, are neither individual entities nor mental impressions, but entangled material agencies."[56] Nuclear colonialism, then, is not a static thing, but a constellation of inseparable discourses and materialities expressed through multiple beings and agencies. It is neither solely discursive nor solely material, neither solely human nor solely more-than-human, and neither solely controlling nor solely resistive. This suggests

that nuclear colonialism is not a one-way exercise of power by an isolated and independent agent, but is a set of interactive material-discursive practices that do things in the world. Rhetoric, when conceived as material-discursive interaction of signals, is a component of the phenomenon of nuclear colonialism, as it provides one medium of interrelation and expression of agency between humans and the more-than-human land community.[57]

One way to analyze nuclear colonialism is through the lens of a discursive formation; yet, as I will argue, the concept needs to be expanded to better highlight the interrelation between discourse and materiality and the rhetorical agency of the more-than-human land community. Foucault views discourse as a complex differentiated practice of representation that reflects the circulations and dispersions of power/knowledge in a particular historical moment. A discursive formation is a set of statements across multiple dispersed texts that reflect an order, despite their seeming difference. He wrote,

> Whenever one can describe, between a number of statements, such a system of dispersion, whenever, between objects, types of statement, concepts, or thematic choices one can define a regularity (an order, correlations, positions and functionings, transformations), we will say, for the sake of convenience, that we are dealing with a *discursive formation.* (Italics in original)[58]

Viewing nuclear colonialism as a discursive formation, then, allows for an analysis of the set of statements across multiple texts that contribute to an ordered understanding of nuclear weapons testing within nuclearism and colonialism. A discursive formation regulates the possibilities of what can be articulated within its boundaries. While there are boundaries, there are also numerous possibilities, including resistive possibilities (or what Foucault calls contradictions), within the formation. Foucault suggests that to uncover a discursive formation, the critic will "define the system of formation of the different strategies that are deployed in it; in other words, if one can show how they all derive (in spite of their sometimes extreme diversity, and in spite of their dispersion in time) from the same set of relations."[59]

While the discursive in discursive formation may be somewhat misleading in that it could imply the opposite of materiality, I seek to push

Foucault's concept of discursive formation such that this formation is both material and symbolic, and open to the more-than-human land community. As such, we might think of material-discursive formations. Although this is not a faithful reading of Foucault's concept, it is an extension that deepens the possibilities of the discursive formation as a heuristic for ecological phenomena. Karen Barad's critique of Foucault's (lack of) treatment of materiality in his theory of discourse argues: "the notions of materiality and discursivity must be reworked in a way that acknowledges their mutual entailment."[60] Barad's solution comes in the form of agential realism, which recognizes the "intra-activity" between discourse and materiality and the agency of more-than-human beings and things.[61] Following Barad, "The primary ontological units [within agential realism] are not 'things' but phenomena—dynamic topological reconfigurings/entanglements/relationalities/(re)articulations. And the primary semantic units are not 'words' but material-discursive practices through which boundaries are constituted."[62] I argue that a material-discursive formation provides a valuable analytic tool for uncovering the ways in which nuclear colonialism is justified and maintained through a variety of ordering statements, and simultaneously resisted through the productive possibilities within the formation. This approach also allows for consideration of what Stacey Alaimo calls "unpredictable material agencies," or the ways in which the more-than-human land community expresses its agency through rhetoric.[63]

In the previous two sections, I argued for two conceptual expansions of current research on nuclear colonialism. First, I moved to decenter the human in nuclear colonialism by drawing on indigenous ecological knowledge and other theorists to examine how the nuclear production complex affects and interrelates with an animate more-than-human land community capable of rhetoric. Human agents are certainly a part, but not the whole, of nuclear colonialism, which is more accurately described as a material-discursive phenomenon with intersecting more-than human agencies (and simultaneous modes of control and resistance). Second, drawing from Foucault and Barad, I use an expanded notion of a material-discursive formation as an analytic tool for understanding the material-discursive interrelations and the rhetorical practices within nuclear colonialism. In the next section, I turn to a brief analysis of nuclear testing at the NTS to illustrate what is gained through understanding the role of the more-than-human land community in nuclear colonialism.

Bombs Away: Violence at the Nevada Test Site

Touring the Nevada Test Site (in 2007) remains one of the more visceral and memorable field experiences I have had. After several years of research on the Atomic West, seeing the scarred cratered landscape of the NTS in person somehow triggered the enormity of the violence that occurred there in a way that I had not felt before. Being there I could see the mark that nuclear testing—this thing that seemed to me so ridiculous and destructive that I almost couldn't believe it really happened—left on this place. I remember standing at the edge of Sedan Crater—1280 feet in diameter and 320 feet in depth—being told by the tour guide that the crater was so big it could be seen from earth-orbit in space. The depth is the equivalent of the 11th tallest high rise building in Salt Lake City. I still feel discomfort and awe when I think about standing on the edge of this huge crater that was part of a project exploring the peaceful uses of nuclear weapons. I had known that the "peaceful use of nuclear weapons" is an oxymoron, but this massive hole in the ground showed me just how violent, jarring, and forceful nuclear explosions are to the earth. What was this 320-foot crater communicating to me? We often talk about the radiation released by these bombs, an invisible form of slow and accretive violence, but these marks on the earth communicated a form of violence to the land, the place, that I was unable to comprehend until I stood there, seeing and listening to what the nuclear bomb crater revealed. Like the permanent stain that the nuclear production complex has made on the geologic record of our earth, this crater similarly marks the long-term effects that a nuclear explosion can have. It also made a mark on me through the mental image that I may never be able to erase from my mind. As I continued to tour the NTS, I made an effort to look out for wildlife and plant-life as I sought to bear witness to the sort of radioactive apocalypse I had imagined in this place. Yet, something surprising happened as I saw seemingly healthy rabbits hop across the road. In spite of the visible craters and other markers of the over nine hundred nuclear explosions, I noticed that this place had not become the radiated and lifeless wasteland I had expected it to be. There were plants everywhere, and animals, all seemingly thriving in this place, revealing the resilience of this place. What were these more-than-human beings communicating to me? How does their presence mark the (un)healthiness of the NTS as a more-than-human land community? What became clear to me on my tour is that this place that has been bombed so many times is not just an innate background or scene for understanding nuclear testing, but a form of rhetoric that participates within nuclear colonialism.

This brief excerpt reveals the seed of the idea for what is now this chapter. Being at the NTS not only confirmed some of what I had imagined about the place but also surprised me. It made me more attuned to the land, the animal and plant presence, and the enormity of the violence that had occurred there. My thinking about nuclear colonialism changed in two important ways, facilitating: (1) a focus on how the more-than-human land community was also affected; and (2) an attention to the forms of resistance, survival, resilience, and rhetoric displayed by the more-than-human land community. In what follows, I turn my attention to an analysis of the NTS as a place where nuclear colonialism is entangled with the entire more-than-human land community, including but not limited to Shoshone and Paiute people, who have been particularly impacted by the decades of nuclear explosions in this place.

As a starting point, I give voice to implications of nuclear testing for the more-than-human land community of the NTS by reviewing some of the documented ecological effects of nuclear testing, not as a scene for my analysis, but as a way to expand our consideration of nuclear colonialism to the more-than-human land community. Recall that 928 nuclear bombs were detonated in the Nevada Test Site between 1951 and 1992, when the Comprehensive Test Ban Treaty (CTBT) came into effect. These above ground atmospheric and underground tests:

> served a variety of national security purposes. These include design testing for the verification of new weapons concepts, proof-testing of existing weapons, effects testing to determine the impact of nuclear weapons on man-made objects and structures, plants and animals, and the physical environment, and experimental testing in the search for possible peaceful uses.[64]

A description of Operation Big Shot (April 22, 1952) provides a snapshot of how nuclear testing affected the entire more-than-human land community at the NTS:

> Effects from the blast [Operation Big Shot] varied, depending on the distance from ground zero. The flash blinded sheep tethered above ground at 900 and 2,000 yards away. Heat from the blast started vegetation fires out to 2,300 yards, leaving numerous yucca plants and Joshua trees smoldering, and gave lethal burns to sheared sheep tethered above ground at 900

> yards. In foxholes, sheep at 900 yards received third degree burns and at 2,000 yards, in the open, first degree burns. Some "trinitite," sand turned to green glass first encountered at the Trinity test, formed at ground zero.[65]

A survey of the human health, environmental, and social justice legacies of the US nuclear testing program reveals that nuclear testing has had a palpable impact on the more-than-human land community of particular locations, such as the Marshall Islands or the NTS.

There has been a recent upsurge of research on the vast ecological implications of the military industrial complex. Sociologist Kenneth Gould contends that "Militarization is the single most ecologically destructive human endeavor."[66] Sociologists Brett Clarke and Andrew Jorgensen specify some of the forms of destruction, "including scorched earth practices, the diversion of rivers, the destruction of plants and animals, the burning of oil wells, and the use of chemical and biological weapons…The legacy of war includes toxic landscapes…posing persistent environmental and social threats."[67] Within the larger military industrial complex, the nuclear weapons production complex, from cradle to grave, has had particularly profound ecological effects. In *Nuclear Wastelands*, Arjun Makhijani, Howard Hu, and Katherine Yih, provide a rigorous account of the ongoing ecological hazards associated with the US nuclear weapons complex.[68] The Department of Energy estimates that the environmental legacy of Cold War nuclear weapons production includes: 1.7 trillion gallons of contaminated groundwater; 40 million cubic meters of contaminated soil and debris; and 100 million gallons of high-level radioactive waste; remediation that is expected to cost over 200 billion dollars and take over 70 years.[69] The NTS is particularly impacted from the 928 nuclear bomb explosions that happened there over a 40-year timeframe. According to Makhijani, Hu, and Yih, "Because of the many underground and near-surface explosions conducted here, the Nevada Test Site is highly contaminated," including an estimated: 2.8 million curies of strontium-90, 4.5 million curies of cesium-137, and 124,000 curies of plutonium underground; groundwater contamination that the DOE has not yet fully characterized; and 420,000 cubic meters of radioactive waste buried at the site. Beyond the site, an estimated 6 million curies of cesium-137 and 4 million curies of strontium-90 remain from atmospheric testing that spread across the nation.[70] The NTS' environmental monitoring project, while often framed in terms of human use and threats to human health, unequivocally shows that the more-than-human land community suffered a blow from the effects of nuclear testing.

Recall that one argument for the start of the Anthropocene is the new mark left in the geological record by the introduction of nuclear weapons (and concomitant testing of those weapons) that released unprecedented amounts of cesium-137 and plutonium-239 and 240 into the earth's ecosystem. Further, the ecological impacts described in this chapter are another type of mark of the consequence of nuclear weapons production, in the form of physical changes to land, flora, and fauna, including the pockmarked landscape, the 320-foot deep Sedan Crater, and the creation of trinitite at ground zero sites.[71]

The NTS does not reflect the entirety of nuclear colonialism, but offers an avenue for examining the complex interrelations and rhetorics between nuclear weapons, the more-than-human land community, humans, colonialism, and nuclearism in this most nuclear-bombed place. My analysis works in the interplay within the material-discursive formation that constrains and enables possibilities for engagement and the forms of rhetoric that emerge within this place, including both human and more-than-human rhetorics. As such, my object of analysis is not a discrete text, but a range of government documents, recollections from a half-day visit to the NTS, two visits to the Atomic Testing Museum in Las Vegas, and participation in a protest event at the NTS. I examine a tension between control and resistance in nuclear colonialism by revealing how nuclear colonialism constrains possibilities and harms the more-than-human land community and enables other possibilities through resistances within the formation. I begin with an analysis of how human rhetorics have constructed the NTS as "wasteland" and then turn to an analysis the rhetorics of the more-than-human land community, all of which interact within nuclear colonialism and a material-discursive phenomenon.

The Wasteland

The US federal government justified locating the nation's nuclear test site in the desert landscape of Nevada because of perceptions of a severe, inhospitable, and remote location that would minimize the amount of harm from nuclear bomb tests. Decision makers' widespread perception of this region as a sparsely populated desert wasteland reflects some European–American assumptions about land and aesthetics, which

stand in contrast to indigenous Native American assumptions about and perceptions of the very same land as sacred, ecologically rich, and life-sustaining.[72]

The first European explorers who encountered the American West saw it as a desert wasteland. Early European–American settlers saw deserts as an obstacle to overcome or avoid.[73] According to historian Henry Nash Smith, to European–American people, whose cultural roots were agricultural, the desert represented a barrier to recognized patterns of living and economic prosperity.[74] Early explorers portrayed the desert as wasteland because of this perceived lack of cultivation potential and economic prosperity. John Charles Freemont characterized the Great Basin desert region in 1844: "It is called a desert and from what I saw of it, sterility may be its prominent characteristic."[75] Lieutenant Wheeler, who lead an expedition through Nevada in 1871 described what is now the NTS as "one of the most desolate regions upon the face of the earth," that was "known in common parlance among the settlers of the mining and mountain towns of Nevada as 'Death Valley'."[76] Moving from the late nineteenth century to the Atomic Age in the second half of the twentieth century, a new layer is added to evolving cultural perceptions of the American West. Starting in the 1940s, the "Atomic West" became a primary center of the nuclear weapons production complex. During the 1940s, 1950s, and 1960s, the federal government created a disproportionate number of militarized and atomic sites in the American West, including Trinity, Los Alamos, the Nevada Test Site, and Rocky Flats. Historians have documented the development of the American West in relation to common perceptions of the region as a low-population wasteland (although interestingly Robert Oppenheimer and other scientists in the Manhattan project loved and valued the desert region of Los Alamos, New Mexico).[77] Reflecting on this history, naturalist Ann Zwinger notes, "We Americans have tended to regard our deserts as wastelands, and nowhere has this been more literally true than the Great Basin."[78]

Descriptions of the NTS conform to this broader conception of the American West as a desert wasteland. According to a government document on atmospheric nuclear weapons testing:

> The Nevada Test Site consists of approximately 1,375 square miles of remote desert and mountain terrain owned and controlled by the Department of Energy and located in the southern part of the Great Basin northwest of Las Vegas...Water—or the lack thereof—is the dominating climatic characteristic. The lower elevations have hot, dry summers and mild winters and average six inches or less of annual precipitation. Higher elevations receive somewhat increased precipitation and have lower temperatures. Temperature extremes on the site range from below zero to 110 degrees Fahrenheit.[79]

An Atomic Testing Museum display describing how the NTS was chosen, states: "The test site possessed favorable conditions for year round testing and mountainous barriers that would prevent close observation." These favorable conditions included the desert environment and fewer humans living there than more populated areas. *Origins of the Nevada Test Site* describes the NTS as a "remote desert and mountain terrain" with a "harsh climate" and Frenchman Flat, the site of countless nuclear bomb tests, as a "remote desert valley."[80] These portrayals of harsh desert terrain are linked with arguments about how few people have lived in the region. According to *Origins of the Nevada Test Site*, "The site and the immediate surrounding area have always been sparsely populated," and "Even with a climate that has varied considerably over the last dozen millennia, the area that is now the Nevada Test Site has never been particularly conducive to human habitation and exploitation."[81] These characteristics of the region made it an attractive site for militarization, first as the Las Vegas Bombing and Gunnery Range and then as the Nevada Test Site. "In 1940, however, the precise characteristics that had made the region so unattractive—the desolation, lack of water, and general uninhabitableness—brought it to the attention of the federal government."[82] In the 1950s, an article in the magazine *Armed Forces Talk*, described the NTS as a "Damn good place to dump used razor blades."[83] This conception of the NTS as a wasteland is an important element in justifications for nuclear colonialism. Because of the perception of this place as a wasteland, the NTS was easily constructed as a national sacrifice zone that supported the interests of US national security.[84] Viewing the rhetorics highlighted here as part of the nuclear colonialism material-discursive formation indicates how these statements about the American West are influenced by relations between the material and the discursive, such that this evolving meaning of the American West, or the Atomic West, cannot be reduced to a simple causal relationship between the physical qualities of the place and the way humans talk about the place. Rather, this rhetoric participates within a complex

interrelationship of place, humans, and more-than-human beings expressed in discursive and non-discursive ways.

Once a region is perceived, named, and valued (or not valued, in this case) as a wasteland, it is easy to think of it as a place for testing nuclear weapons. The consequences of weapons testing and other toxic and violent activities then contribute to the creation of a more literal wasteland through the rhetorical force of destruction, death, and ecological damage to the more-than-human land community. American Studies scholar John Beck notes, "Much of the Southwest is an achieved apocalypse, a space laden with invisible toxic evils."[85] Thus, the widespread human perception of the region as a wasteland has rhetorical force; it has material consequences for a land-use policy that sacrifices the more-than-human land community in the interests of national security.

Yet, these human descriptions of the Nevada Test Site do not occur in a vacuum that is separate from the more-than-human land community. The physical ecological features that make the American West appear "ruggedly severe" and "inhospitable to humans" play a role in the material-discursive formation of the region as wasteland. Indeed, we could not conceive of the region as wasteland without the entanglement between the material and discursive. Rhetoric, as signals shared between beings, encompasses the expressions of the more-than-human land community, how they are taken in by human beings and then expressed through terms like inhospitable, wasteland, and harsh environment, and how these different forms of expression come together as a part of the phenomenon of nuclear colonialism. As such, the construction of wasteland as a strategy of control within nuclear colonialism is itself reflective of the interrelationship between the human and more-than-human, and between materiality and discourse. In the next section, I examine how the more-than-human land community might be responding to the wasteland designation and other aspects of nuclear colonialism through expressions of damage, resistance, and resilience in the face of nuclear testing.

Rhetorics of Resistance and Resilience

From an ecological perspective, the Great Basin resists the wasteland moniker through physical expressions of diverse animal and plant life, hot springs, aquifers, and diverse basin and range geology. Historian Donald Worster challenges the common human rhetorical framing of

the American West as a desert wasteland that is devoid of life. He wrote, "Almost nowhere was the American desert simply a stretch of empty sand; everywhere there was life. Americans had only to take the trouble to look."[86] In fact, according to a study by NatureServe in 2002, Nevada—made up of primarily desert terrain—ranks sixth in the US for its high level of endemic biological diversity.[87] Moreover, "Nevada is 11th among all states in total species diversity, 6th among all states in number of unique (endemic) species, including 64 recently discovered endemic species of springsnails, 8th among all states in butterfly diversity, and 9th among all states in mammal diversity."[88] Although water is not abundant in this region, springs, streams, and large aquifers span the desert terrain, providing water for the multiplicity of flora and fauna. When considered from the perspective of a thriving more-than-human land community, Nevada, and more broadly the American West, is a desert but is far from an "inhospitable" wasteland. In my own encounters with the Nevada Test Site and surrounding areas, I was often initially surprised, given my upbringing in a very different ecological region, to see just how many animal and plant species occupy this land.

The NTS in particular is home to a complex mosaic of more-than-human life that is representative of both the Mojave and Great Basin Desert ecosystems. According to the Department of Energy, there are 1500 animal species, including 924 species of insects, and 750 plant species that have been documented at the NTS.[89] According to the Department of Energy:

> Despite the harsh climate, the Nevada Test Site is home to a surprising array of plants and animals. The site is a transitional zone between the Great Basin and the Mojave deserts. Species from both deserts, including those native to one but not the other, are found in the area. Kit fox and the sidewinder rattlesnake, common only in the Mojave Desert, live in the southern reaches of the site, and mule deer and the striped whipsnake, favoring a Great Basin desert environment, reside in the northern parts. Other animals found on the site include coyotes, golden eagles, wild horses, mountain lions, and an occasional bighorn sheep and antelope. The range in elevation also helps provide diversity in flora and fauna. Mojave Desert plants such as the creosote bush dominate the lower elevations. Plants of the Great Basin Desert prevail above 5,000 feet, with open pinon-juniper and sagebrush woodland appearing at the 6,000-foot level. Between the two elevation extremes, sagebrush is the most common plant.

> Springs, the only perennial water sources on the site, sustain the wildlife population and are widely, if not abundantly, scattered across the area.[90]

While it may look like a wasteland because of a lack of charismatic mega flora and fauna, the ecology of the NTS is incredibly diverse. Los Alamos Biologist and Anthropologist Frederick Worman, who conducted ecological studies at the NTS, noted in his 1965 *Anatomy of the Nevada Test Site*: "Unfortunately, too many people think of the desert as an immense wasteland of drifting sands, populated by centipedes, scorpions, awesome spiders and reptiles—all dangerous and deadly."[91] In contrast, he argues, "To view the blooming desert [at the NTS] during a wet period is to see it at its most magnificent moment. One looks out upon a myriad of flowers designed to move the amateur taxonomist to complete ecstasy."[92] The more-than-human inhabitants have a strong presence in this place. This presence is an important form of rhetorical resistance to the wasteland rhetoric, and nuclear colonialism more generally. The more-than-human land community quite literally enacts a rhetoric of life that stands in contrast to the ways that European Americans have framed the very same place as a wasteland that is worthy of sacrifice in the interest of national security.

There are other more-than-human rhetorics that resist nuclear colonialism's controlling forces and highlight the interanimation between more-than-human beings within this material-discursive formation. Physical and geological markers of nuclear testing—such as the increase in plutonium-239 and 240 in the geologic record and the pockmarked landscape of the NTS—also act as rhetorical resistances to nuclear colonialism. Previous research indicates that national security and secrecy are essential components in attempts to maintain nuclear colonialism as a form of control and to justify the national sacrifice zones of the nuclear production process.[93] In his analysis of the Hanford Reservation, a former plutonium production site, William Kinsella argues that waste and other legacies from the nuclear weapons production process stand as material texts that undermine forms of discursive containment invented to maintain secrecy about the human and ecological health implications of nuclear weapons.[94] Similarly, the physical ecological legacies of nuclear weapons testing—itself a reality that many Americans do not realize actually happened in our own backyard—are a form of rhetoric that challenges and resists efforts to maintain secrecy and highlight

the national security necessities of nuclear weapons. Recall that the invention of nuclear weapons is a factor, if not the defining factor, in the Anthropocene because of the permanent geologic record of increased amounts of plutonium-239, plutonium-240, and cesium-137 in the world. Likewise, the many craters within the NTS are a semi-permanent mark left by nuclear weapon tests as reminders of ground zero sites. These physical attributes cannot be (easily) erased, and present a permanent record of nuclear weapons production that can be seen by anyone willing to look. Nuclear weapons tests, then, leave an indelible trace of their own impact on the more-than-human land community of the NTS and beyond, and bear material witness to the global impact of nuclear weapons.

The more-than-human land community is an active agent in the ongoing phenomenon of nuclear colonialism, not only through its resistance to the wasteland and containment but also through its essential role in the nuclear production process. In other words, the testing of nuclear weapons is inextricably entangled with how the more-than-human land community of the NTS contributed to and reacted to nuclear bomb detonations. Descriptions of nuclear testing reveal that the more-than-human land community did not always act as expected during nuclear bomb detonations at the NTS, and that it was folly to assume that humans could predict exactly how the community would react. For example, according to A. Costadina Titus, "The geology of the area, which was to become so important in later years when testing moved underground, was given little consideration during the original selection of the site…But, like the weather, these geological formulations have not always behaved as expected."[95] Worman offers another example in his description of how native plants no longer appear in ground zero sites, but that Russian thistle "invaded the ground zeros en masse in the first growing season after the detonation of nuclear weapons."[96] The rapid growth of Russian thistle in ground zero sites is an example of how nuclear testing had profound implications on the ecology of the site, such that native plants were replaced by new plants in a material rhetoric of both violence and adaptation. The unexpected nature of nuclear testing and more-than-human land communities is also demonstrated by the effects of radioactive releases, such that the scientists and engineers conducting nuclear tests "could not have anticipated how these materials would travel in the environment, how the chemistry would change over

time."[97] In these unexpected actions of the more-than-human land community, we see both the violence of nuclear testing and the resilience of the complex ecological system of flora, fauna, climate, and geology at the NTS.

Similarly, despite the seemingly destructive nature of nuclear testing, there are indications of the resilience of the more-than-human land community within the NTS. Even with over 900 nuclear bomb detonations, the NTS is not a literal wasteland where no beings can live. Indeed, I was surprised to see rabbits hopping around and the preponderance of plants that seemed to be thriving at the NTS. Ironically, it could be argued that perceived wasteland regions are actually some of the most protected ecological regions. For example, the US Fish and Wildlife Service recently opened the Rocky Flats National Wildlife Refuge in Colorado. The refuge was formerly the site of a nuclear weapons facility turned EPA superfund site. Although inconceivable to some skeptics, the refuge teems with a rich resident and migratory more-than-human land community.[98] However the remediation of this more-than-human land community is judged, and whether this site is seen as a form of green washing, the wildlife refuge demonstrates the resilience of the more-than-human land community in the face of the indelible ecological impact from the invention of nuclear weapons. Within a perceived wasteland lies the possibility of a more-than-human rhetoric that resists human domination and degradation.

Since the moratorium on nuclear testing in 1992, the Nevada Test Site has engaged in ecological restoration, environmental remediation, and species protection programs that, combined with the restrictions on human access to the area, are helping more-than-human beings recover from the decades of nuclear testing.[99] For example, the most recent environmental assessment of the NTS indicates:

> Though NNSS [Nevada National Security Site]-related radionuclides are detected in some plants and animals, the levels pose negligible risk to humans and biota. The potential dose to a person hunting and consuming these animals is well below dose limits to members of the public (see Section 9.1.1.2). Also, radionuclide concentrations were below levels considered harmful to the health of the plants and animals; the dose resulting from observed concentrations were less than 4 percent of dose limits set to protect populations of plants and animals (see Section 9.2).[100]

These data suggest that the level of radioactive contamination to the more-than-human land community is less than might be expected due to the lingering effects of the nuclear testing that occurred between 1951 and 1992. Of course, this does not mean there is not a negative ecological impact—indeed the very same report indicates that humans are advised not to consume flora and fauna from the NTS—but it does demonstrate forms of recovery and resilience in the more-than-human land community. The endangered desert tortoise, for example, is benefiting from the restricted human activities on the Nevada Test Site, and a 2008 report listed that the biggest threat to desert tortoises on the NTS was not exposure to lingering radiation but being hit by employee cars or injured by construction on the site.[101] In a milieu that still denies downwinders, atomic veterans, and atomic workers compensation for cancers and death associated with nuclear testing and fails to recognize the sovereign rights of Shoshone and Paiute people, the plant and animal diversity at the Nevada Test Site can be seen as an ecologically positive consequence within nuclear colonialism. It can be seen as a form of resilience that reveals the complexity of the ecological implications of nuclear testing and the possibility for both damage to and protection of the more-than-human land community.

Conclusion

Nuclear colonialism is ordinarily used to describe the relationships between the nuclear production complex and indigenous people. In this chapter, I extended the concept to consider the relationship between nuclear colonialism and the entire more-than-human land community (including humans). By viewing nuclear colonialism as a phenomenon that can be examined through the lens of a material-discursive formation, this chapter highlights how the more-than-human land community is not just a passive victim of violent nuclear bomb explosions but also an active participant within the larger phenomenon. Through an analysis of human and more-than-human rhetorics within the nuclear colonialism formation, I have shown how limiting analysis to human rhetorical practices, such as naming the American West as a wasteland suitable for nuclear testing, offers only a partial view of the complexity of actors and rhetorics within nuclear colonialism. An analysis of the more-than-human land community's responses to nuclear testing reveals the

complex ecology of legacies of nuclear testing at the NTS. In so doing, this chapter also engages conceptual interrelationships between rhetoric, ecology, and materiality that suggest the importance of moving beyond: human-centered notions of rhetoric toward recognition of the more-than-human land community's rhetorical performances and practices; notions of seeing the materiality of rhetoric in the consequences of discourse toward seeing rhetoric as material-discursive; and viewing the environment as background for rhetorical action toward an ecological view that focuses on interconnections experienced by the variety of beings that inhabit our world.

This chapter is an admittedly partial foray into thinking through the relations between rhetoric, materiality, and ecology in the context of theorizing nuclear colonialism as a more-than-human phenomenon. As such, there are several implications and opportunities for opening further avenues of research. One possibility is to further consider how human-perceived and rhetorically designated "wasteland" places may actually allow for ecological restoration, and healthier more-than-human land communities. Similar to arguments that wilderness designations can lead to protection of "wild" spaces through reduced contact with humans, an ironic consequence of the nuclear production process has been the creation of protected zones with limited human engagement where wildlife populations thrive. Another possibility is to think about nuclear weapons themselves as rhetorical agents within nuclear colonialism. My analysis primarily focused on the rhetorical interplay between humans and more-than-human land communities as active agents within nuclear colonialism. Yet, following Barad and others, we might also consider how the nuclear weapon itself is rhetorical. Future inquiry might examine how nuclear weapons exceed their human creators and work in unexpected ways within nuclear colonialism.

In closing, I return to the question of what the legacy of nuclear weapons testing might be trying to tell us. Nuclear testing at the NTS is not just a form of violence and environmental injustice experienced by humans, but is also experienced by the more-than-human land community. That community is telling us, through permanent geologic markers, massive ground zero craters, destruction and resilience of flora and fauna, that it is an active participant in nuclear colonialism.

Notes

1. Kevin Schaul, "Eight Countries. 2,055 Nuclear Tests. 71 Years—Mapped," *Washington Post*, January 6, 2016, https://www.washingtonpost.com/.
2. Twenty-four of the 928 tests were conducted collaboratively by the United States and the United Kingdom. See US Department of Energy, *United States Nuclear Tests: July 1945 through September 1992* [DOE/NV--209-REV 15] (Las Vegas: US Department of Energy, December 2000).
3. David Biello, "Nuclear Blasts May Prove Best Marker of Humanity's Geologic Record," *Scientific American*, February 10, 2015; Jan Zalasiewicz et al., "When Did the Anthropocene Begin? A Mid-Twentieth Century Boundary Level is Stratigraphically Optimal," *Quaternary International*, 383 (October 5, 2015).
4. The disproportionate harm expands beyond nuclear weapons testing to include other stages in the nuclear production process—such as uranium mining, weapons assembly, and nuclear waste—that have occurred primarily in the American West. Valerie L. Kuletz, *The Tainted Desert: Environmental and Social Ruin in the American West* (New York: Routledge, 1998).
5. Although the site was renamed the Nevada National Security Site in 2000, I use the name Nevada Test Site in this chapter because it was the name of the site when nuclear weapons testing occurred.
6. Richard W. Stoffle et al., *Native American Cultural Resource Studies at Yucca Mountain, Nevada* (Ann Arbor: University of Michigan, Institute for Social Research, 1990).
7. Consolidated Group of Tribes and Organizations, "Appendix C: American Indian Assessment of Resources and Alternatives Presented in the SWEIS," in *Final Site Wide Environmental Impact Statement for the Continued Operation of the Department of Energy/National Nuclear Security Administration Nevada National Security Site and Off-Site Locations in the State of Nevada*, vol. 2 (Appendixes A Through I) [DOE/EIS-0426] (Las Vegas: US Department of Energy/National Nuclear Security Administration Nevada Site Office, February 2013), C-7.
8. Corbin Harney, *The Way It Is: One Water, One Air, One Mother Earth* (Nevada City: Blue Dolphin Publishing, Inc., 1995); Rebecca Solnit, *Savage Dreams: A Journey into the Landscape Wars of the American West* (Berkeley: University of California Press, 2000).
9. Terrence R. Fehner and F.G. Gosling, *Atmospheric Nuclear Weapons Testing 1951–1963* [DOE/MA-003] (US Department of Energy, September 2006), 9.
10. Fehner and Gosling, *Weapons Testing*, 10.

17. This is indebted to many thinkers, including both indigenous knowledge and new materialism. See Gregory Cajete, "'Look to the Mountain' Reflections on Indigenous Ecology," in *A People's Ecology: Explorations in Sustainable Life* (Santa Fe: Clear Light, 1999); Timothy Morton, *Posthumanities: Hyperobjects: Philosophy and Ecology after the End of the World* (Minneapolis: University of Minnesota Press, 2013); Stacy Alaimo, *Bodily Natures: Science, Environment, and the Material Self* (Indiana University Press, 2010).
18. For example, Thomas Rickert, *Ambient Rhetoric: The Attunements of Rhetorical Being* (Pittsburgh: University of Pittsburgh Press, 2013); Richard A. Rogers, "Overcoming the Objectification of Nature in Constitutive Theories: Toward a Transhuman, Materialist Theory of Communication," *Western Journal of Communication* 62, no. 3 (1998); Natasha Seegert, "Play of Sniffication: Coyotes Sing in the Margins," *Philosophy and Rhetoric* 47, no. 2 (2014); Natasha Seegert, "Rewilding Rhetoric with Animate Others," *Review of Communication* 16, no. 1 (2016).
19. Seegert, "Play of Sniffication," 160.
20. Seegert, "Rewilding Rhetoric," 79.
21. Churchill, "Radioactive Colonization"; LaDuke, *All Our Relations*; Winona LaDuke and Ward Churchill, "Native America: The Political Economy of Radioactive Colonialism," *The Journal of Ethnic Studies* 13, no. 3 (1985): 107.
22. For example, see Endres, "The Rhetoric of Nuclear Colonialism"; Nelta Edwards, "Nuclear Colonialism and the Social Construction of Landscape in Alaska," *Environmental Justice* 4, no. 2 (June 2011), doi:10.1089/env.2010.0023; Grinde and Johansen, *Ecocide of Native America*; Valerie Kuletz, *The Tainted Desert*; Nuclear Information and Resource Service, "Nuclear Waste + Native Lands"; Thorpe, "Our Homes Are Not Dumps."
23. "Indigenous Anti-Nuclear Statement: Yucca Mountain and Private Fuel Storage at Skull Valley," Indigenous Environmental Network, http://www.ienearth.org/indigenous-anti-nuclear-statement-yucca-mountain-and-private-fuel-storage-at-skull-valley/.
24. Unlike other forms of colonialism, in settler colonialism the colonizer takes over and stays on the land of original inhabitants. Patrick Wolfe, "Settler Colonialism and the Elimination of the Native," *Journal of Genocide Research* 8, no. 4 (2006).
25. A more thorough discussion of these systems can be found in Endres, "The Rhetoric of Nuclear Colonialism."
26. Tuck and Yang, "Decolonization Is Not a Metaphor"; Jodi A. Byrd, *The Transit of Empire: Indigenous Critiques of Colonialism* (Minneapolis:

University of Minnesota Press, 2011); Jace Weaver, "Indigenousness and Indigeneity," in *A Companion to Postcolonial Studies*, eds. Henry Schwarz and Sangeeta Ray (Hoboken: John Wiley & Sons, 2008).

27. Bryan McKinley Jones Brayboy, "Toward a Tribal Critical Race Theory in Education," *The Urban Review* 37, no. 5 (2006); Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge: Harvard University Press, 2011).
28. Carole Gallagher, *American Ground Zero: The Secret Nuclear War*, (New York: Random House, 1994); Richard L. Miller, *Under the Cloud: The Decades of Nuclear Testing* (The Woodlands: Two-Sixty Press, 1991).
29. Consolidated Group of Tribes and Organizations, "Appendix C: American Indian Assessment"; Harney, *The Way It Is*; Kuletz, *The Tainted Desert*.
30. Danielle Endres, "From Wasteland to Waste Site: The Role of Discourse in Nuclear Power's Environmental Injustices," *Local Environment* 14, no. 10 (2009); Endres, "The Rhetoric of Nuclear Colonialism"; Danielle Endres, "Sacred Land or National Sacrifice Zone: The Role of Values in the Yucca Mountain Participation Process," *Environmental Communication: A Journal of Nature and Culture* 6, no. 3 (2012).
31. Michel Foucault, *The Archaeology of Knowledge and The Discourse on Language* (New York: Pantheon Books, 1972).
32. Michel de Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1984).
33. This draws from the scholarly conversation around new materialism. See Alaimo, *Bodily Natures*; Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007); Karen Barad, "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter," *Signs: Journal of Women in Culture and Society* 28, no. 3 (2003); Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2009); Donna Jeanne Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Free Association Books, 1991); Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2007).
34. The term more-than-human land community is an amalgamation of concepts by Aldo Leopold and David Abram. See Aldo Leopold, *A Sand County Almanac: With Other Essays on Conservation from Round River* (Oxford: Oxford University Press, 1966); David Abram, *The Spell of the Sensuous: Perception and Language in a More-Than-Human World* (New York: Vintage, 1997).

35. Following Endres and Senda-Cook, "place refers to particular locations (e.g., a city, a particular shopping mall, or a park) that are semi-bounded, a combination of material and symbolic qualities, and embodied." Places are always in articulation with broader spatial constructs—social space—that frame the way beings understand and interact with particular places. Danielle Endres and Samantha Senda-Cook, "Location Matters: The Rhetoric of Place in Protest," *Quarterly Journal of Speech* 97, no. 3 (2011): 286.
36. Abram, *The Spell of the Sensuous*; David Abram, *Becoming Animal: An Earthly Cosmology*, 1st ed. (New York: Pantheon, 2010); Leopold, *A Sand County Almanac*.
37. See note 33.
38. Cajete, Weaver, Deloria Jr., Medin, and Bang are careful to avoid essentialist notions that all Native Americans are ecologically superior to other racial, ethnic, or cultural groups, which would play into the Ecological Indian stereotype. Traditional indigenous ecological beliefs do not preclude exploitation, damage to the environment, or lack of alignment between spiritual ideals and actual practices within indigenous communities. While Native American cultures have changed over time and adapted, the roots of spiritual ecology as a cultural belief remain for many traditionalist Native Americans. Contemporary Native Americans often experience a dual existence between traditional spiritual ecological beliefs and the reality of living within a dominant society that does not recognize these beliefs. See Gregory Cajete, "'Look to the Mountain'"; Vine Deloria, *Red Earth, White Lies: Native Americans and the Myth of Scientific Fact* (Golden: Fulcrum Publishing, 1995); Vine Deloria, *God Is Red: A Native View of Religion* (Golden: Fulcrum Publishing, 2003); Douglas L. Medin and Megan Bang, *Who's Asking?: Native Science, Western Science, and Science Education* (Cambridge: MIT Press, 2014); Jace Weaver, "Introduction: Notes From a Miner's Canary," in *Defending Mother Earth: Native American Perspectives on Environmental Justice*, ed. Jace Weaver (Maryknoll, NY: Orbis Books, 1996).
39. Joe Sheridan and Roronhiakewen Longboat, "He Clears the Sky"; Dan Longboat, "The Haudenosaunee Imagination and the Ecology of the Sacred," *Space and Culture* 9, no. 4 (2006).
40. Abram's argument relies on a narrative of return to the traditional practices of indigenous cultures. Abram's concept is indebted to indigenous knowledge, even while his account romanticizes and historicizes indigenous cultures within what Kretch has called the Ecological Indian stereotype. See: Shepard Krech III, *The Ecological Indian: Myth and History* (New York: W. W. Norton & Company, 2000).

41. Cajete, "'Look to the Mountain,'" 4.
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47. Ibid., 259.
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49. For more on the tensions between environmentalism and environmental justice, see Phaedra C. Pezzullo and Ronald Sandler, "Introduction: Revisiting the Environmental Justice Challenge to Environmentalism," in *Environmental Justice and Environmentalism: The Social Justice Challenge to the Environmental Movement*, eds. Ronald Sandler and Phaedra C. Pezzullo (Cambridge: The MIT Press, 2007).
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54. Tuck and Yang, "Decolonization Is Not a Metaphor."
55. Ibid., 4.
56. Barad, *Meeting the Universe Halfway*, 56.
57. See Rickert, *Ambient Rhetoric*; Rogers, "Overcoming the Objectification"; Samantha Senda-Cook, "Rugged Practices: Embodying Authenticity in Outdoor Recreation," *Quarterly Journal of Speech* 98, no. 2 (2012); Bridie McGreavy, "Resilience as Discourse," *Environmental Communication* 10, no. 1 (2016).
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61. Barad, *Meeting the Universe Halfway*; Barad, "Posthumanist Performativity."
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