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The Pacific Proving Grounds and the Proliferation of Settler Environmentalism

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Scene One

Located on the north end of Runit Island of Ānewetak Atoll in the Republic of the Marshall Islands (RMI), in the northwest Pacific Ocean, an eighteen-inch-thick concrete shell covers a crater filled with more than 3.1 million cubic feet of radioactive material, left over from US nuclear weapons testing in the mid-twentieth century. Constructed in the late 1970s, Runit Dome, also known by locals as "The Tomb," is now cracked and worn, bobbing up and down in the water, increasingly vulnerable to the effects of sea-level rise. In a harrowing report about Runit Dome in November 2019, journalist Susanne Rust elaborates: "It took 4,000 US servicemen three years to scoop up 33 Olympic-sized swimming pools' worth of irradiated soil and two Olympic swimming pools' worth of contaminated debris from islands across the atoll and dump it into the crater on Runit Island. … Six men died during the cleanup; hundreds of others developed radiation-induced cancers and maladies that the US government has refused to acknowledge."[1]

Here is an overt convergence of climate change and the legacies of nuclear imperialism. The dreadful fact that accompanies most introductions to the Marshall Islands is this: Between 1946 and 1958, the US government conducted sixty-seven nuclear weapons tests concentrated at Pikinni (Bikini) and Ānewetak atolls. If the cumulative explosive yield of these tests were distributed evenly across this period of time, it would equal one point six Hiroshima bombs exploding every single day for those twelve years.[2] During this span of time, several islands were rendered uninhabitable for the generations to come, and hundreds of Marshall Islanders were moved to other islands located farther (but not far enough) away from the

various test sites on their home islands. This coerced removal and resulting disruption of a people's relation to land and sea constitutes a form of Indigenous dispossession to be sure; it is arguably the most overt manifestation of what this special forum calls nuclear imperialism. While the Marshall Islands had already endured four hundred years of Spanish, German, and Japanese colonialism, the methods of this particular, US- and UN-sanctioned military and scientific occupation suggests how settler colonialism's "logic of elimination" can persist through seemingly benevolent forces of environmental science, liberal trusteeship, and the false promises of enclosure, containment, and protection.[3]

Figure 1. Runit Dome. Photo credit: Carolyn Cole. Copyright © 2019. *Los Angeles Times.* Used with permission.

Scene Two

At a 2018 climate change conference in Mājro (Majuro), capital of the Marshall Islands, scientist Chip Fletcher proposed that the best response to climate change–induced rising waters in the area would be to raise shorelines artificially, through a series of exorbitant, massive, land reclamation projects that involve dredging sand from the sea floor. Fletcher presented his land reclamation plan as likely the *only* option that does not displace the Marshallese from home again.[4] Beyond this second convergence of climate change and the history of nuclear

imperialism, other forces, legacies, and legends are bound together at the Marshall Islands, too. Stories of global sand shortages, unrelenting extractive capitalism, the juridical crafting of the ostensibly free seas, and racialized notions of property rights also pepper the industry of land reclamation and artificial islands. Fletcher's plan to raise the shorelines of the Marshall Islands applies the same technologies used by China to extend the shorelines of the Spratly Islands in the South China Sea to make a grab for shipping lane rights measured from the point at which land meets sea. The same methods sustain the developments for mega beach resorts and tourist attractions off the shores of Dubai and Singapore, as well as areas of concentrated industrial development such as Jazan Economic City in Saudi Arabia and Jurong Island in Singapore.[5] Whereas artificial islands primarily arise out of contexts of extreme wealth and aggressive development (for a US example, think of Florida's Venetian islands, riddled with millionaire mansions, off the coast of Miami), these artificial island development technologies and the few corporations that control them are now being considered widely as one response to a range of climate change problems, from rising tides to dying coral reefs. One painful irony is that, due to a dramatically increased demand on sand worldwide, the land reclamation process can involve blasting damaged coral reefs and pulverizing them or using existing coral skeletons as a substrate for the expanded shoreline of dumped sand.

Introduction: Settler Environmentalism, Debilitation, and Enclosure

> "Actually, the atomic age can well provide the means of solving the very problems it creates."
>
> —Eugene P. Odum, "Ecology and the Atomic Age"

The conversion of bleached coral reefs into sandy beaches illuminates how capitalist development converts scenes of ecological destruction into schemes for further (green) capitalist development. Jasbir Puar has noted how debilitation not only indicates a body's relation to precarity but can also mark an opportunity for capitalism to score a second round of profitable extraction by demanding that the debilitated body overcome or recuperate from its debilitated state so that it can once again become productive to the system.[6] "Debility is profitable to capitalism," writes Puar, "but so is the demand to 'recover' from or overcome it."[7] When considering the nuclear weapons testing that brought on epic proportions of environmental destruction to the Marshall Islands and its peoples, I understand the project to be an act of environmental debilitation, not only aimed at improving death-dealing weapons for the Cold War, but also designed with the potential of future scientific research (radiation ecology, ecosystems science, and genetic mutation) in mind. Environmental debilitation can thus also pave the way for ecodevelopment enterprises, which make profit on the promise of keeping the planet inhabitable, at least by those wealthy enough to meet the exigencies of

climate change with expensive, often private-sector tech solutions. Such is the extractive capitalist logic driving what Julie Sze calls ecodesire, or "the ideology that posits that technology, engineering, and built solutions can provide the pathway out of environmental destruction."[8]

While much literary and cultural scholarship on the rise of the nuclear age has focused on the concomitant rise of insecurities about body and environment under the duress of wartime, this essay crafts a different but intertwined history, showing how the transformation of the Pacific Ocean into a nuclear testing ground was parlayed into governmental projects for the remaking of life itself. The military experiments with nuclear and other weapons throughout the Pacific suggested a new phase in US imperial world-making, as the ecologies of waters, islands, sea creatures, and Pacific Islanders were rendered experimental materials for modeling shifts in social and ecological forms of governance. Through a review and analysis of US government documents, United Nations charters, and the history of the concept of the ecosystem, I take a closer look at the biopolitical securitization that underpins the fabric of international environmental legislation. I argue that settler colonial notions of property ownership and racialized configurations of "the human" fundamentally inform and limit contemporary approaches to environmental regulation, which relies on understanding the environment through constructions of enclosure. "Enclosure" is a term I borrow from Marxist theory that describes one step in the process of privatization and gentrification. As it applies to the Marshall Islands, I focus on the function of enclosure as a structuring concept in the Cold War productions of the trust territory, the living laboratory, and the ecosystem.

In this essay, then, enclosure names the epistemological mechanism that facilitates the transformation of the Marshall Islands first into a "strategic trust territory," then into a "living laboratory," and subsequently into an (irradiated) ecosystem—a unit of analysis that forms the basis for what I am calling "settler environmentalism."[9] The trust territory, the laboratory, and the ecosystem all operate as mythological objects of control. They are spaces imagined to be discrete, concretely defined, and measured in ways that defy the movements of peoples, flora, fauna, and for that matter, radiation. The promise of enclosure at work in the Marshall Islands is inspired by both the imagined security of the Pasteurian laboratory and the enforced sovereignty of the Westphalian nation-state. These fixed spatial configurations constitute perhaps two of the most recognizable hallmarks of "modernity." To impose such bounded cartographies on something as interconnected as the environment seems to be an egregious mistake—one that strikes at the heart of the hierarchical form of governance grounded in racialized Enlightenment principles of the human as exceptional and property as private. Such "colonial lives of property" cannot underpin environmental futures.[10]

Settler environmentalism is an approach to the environment as something to be measured, contained, regulated, and even governed as if it were bound by the same strictures as the Westphalian nation-state. Settler environmentalism arises out of Euro-American notions of private property and Enlightenment Man as superior to nonhuman animals as well as other humans racially construed to be premodern and therefore unable to comprehend and hold the reins of self-governance. This racialized notion of the human, as many scholars argue,

produces the relegation of Black, Indigenous, and other people of color to the realm of the inhuman.[11]

Cold War experiments in forms of securitization rhetorically and ideologically inflected how international lawmakers would approach environmental issues. Environmental law sprang onto the books at a moment when natural resources were coming under a model of jurisprudence that foregrounded the discourse of management (presumably to be controlled by world powers to fuel the global economy). The intertwined history of nuclear imperialism and international environmental law, then, keeps contemporary responses to climate change problematically tethered to the liberal individualism that forms the basis for settler law. Because of this tether to racialized concepts of property, land, and ownership, the tools international environmental law deploys to address climate change will always tend toward the affirmation of wealth as delineated and reaped through racial capitalism.

To break from such perpetual extractive relations to land, sea, and life, I conclude with Kathy Jetñil-Kijiner's poetry as an example of imagining Pacific resurgent futures, and gesture toward the formation of an oceanic undercommons based on principles of deep reciprocity and antihierarchical, place-based relationships garnered from the teachings of Black, Indigenous, and other feminists as well as queers of color. Nuclear experimentation in the Pacific, I argue, is not only an example of US militarization profiting from the disposability of Pacific Islanders; it also becomes the occasion for deepening US presence in the Pacific under the guise of aid, protection, and environmental remediation. It is in the wake of Hiroshima and Nagasaki that the US takes up its mantle as the scientific, military, and economic manager of what would come to be known as the "American Lake." It is in this post-World War II moment that the world witnesses the proliferation of legislative acts that subject the Pacific to new forms of governance, issuing forth from the peculiar form of "the strategic trust territory," unique to the Marshall Islands. The nuclear devastation this strategic trust allows then gives rise to a managerial form of environmentalism as international policymaking bodies like the UN, which is simultaneously hard at work at securitizing and militarizing the Pacific arena, apply their security logics and instruments to containing ecological fallout.

The "Strategic Trust": Occupation as Trusteeship

Toward the end of World War II, during the transfer of power from Japan to the US, the Marshall Islands, which had been under Japanese occupation, came under the control of the US Navy, whose victories in 1944 over the Japanese military units stationed on-site conferred upon it by default the status of an interim administration over a former Japanese colony and whatever the Marshalls would become postwar. In 1945, Chapter XII of the United Nations Charter established an international trusteeship system, charged with overseeing the "administering authorities" of eventually eleven former colonies, characterized in Chapter XI of the UN Charter as "non-self-governing territories," "whose peoples have not yet attained a full measure of self-government." The "Trusteeship System" was an outgrowth of the League of Nations "Mandate System." As legal scholar Ralph Wilde points out, the international trusteeship system was an extension of colonial trusteeship and therefore carried

over all of the attendant ideological framings of the civilizing mission of empire: "In the first place, covering colonial trusteeship as well as state-conducted foreign territorial administration under the Mandate and Trusteeship systems, the racialized concept of a 'standard of civilization' was deployed to determine that certain peoples in the world were 'uncivilized', lacking organized societies, a position reflected and constituted in the notion that their 'sovereignty' was either completely lacking, or at least of an inferior character when compared to that of 'civilized' peoples."[12] As Asian studies scholar Kuan-Hsing Chen has also noted, "U.S. neoimperialism both disrupted and continued Japanese colonialism. The cold war mediated old colonialism and new imperialism."[13] For legal scholars like Wilde and Antony Anghie, the Trust Territories of the Pacific constituted precisely one form of US neo-imperialism, which could be described as "occupation as trusteeship."[14]

In November 1946, President Truman proposed an agreement establishing the Trust Territories of the Pacific Islands as a strategic area trusteeship, approved by the UN Security Council and President Truman himself in 1947. The Trust Territory of the Pacific Islands was the *only* trust territory designated a *strategic* trust and thus immediately placed under the oversight of the UN Security Council, where the US held veto power, rather than the General Assembly. Without much pretense, the UN Security Council was acting as a political arm of the US within the international arena. Under the agreement, most of Micronesia was placed under the administration, legislation, and jurisdiction of the United States. In the case of the strategic trust, securitization becomes the mechanism for continuing colonial subjugation under the auspices of UN-approved international law.

While the post-World War II era certainly can be understood as a period of decolonization, the United Nations becomes the administrative body that begins to manage this proliferation of ostensibly newly liberated nation-states, wherein the recognition and adjudication of rights-based liberalism worldwide would become a way to implement a hierarchy of nation-states according to a metric established by those at the top.[15] This hierarchy afforded more power to a few state powers like the United States and Japan whose imperial ambitions, holdings, and operations could be nested within a legal framework that offered rights, protections, and processes of grievance unevenly. This rendering of occupation as a legalized trusteeship not only constituted a sea change in international relations but also coincided with the official conversion of many Pacific Islands into US military strongholds and scientific laboratories.

The strategic trust period was also the most intensive period of nuclear testing and the consequent emergence of global attention to the ways military weapons could not only lay waste to land-based flora, fauna, and structures in the immediate vicinity but also have profoundly devastating effects on food, water, and air thousands of miles away. This concurrence produced the following: 1) the rationalization of securitization to defend nuclear experimentation; 2) the propagandistic belief that nuclear testing in the Marshall Islands was a remote and isolated occurrence; 3) an environmental response, based on the very models of securitization that occasioned nuclear warfare, which was needed to contain ecological fallout; and 4) the mapping of environmental law on top of an already uneven terrain of sovereignty in which the Marshall Islands, for example, is registered under the subnational

heading of "territory." By institutionalizing "non-self-governing territories" (somehow distinct from "colonies"), the UN produces through its racialized liberal mandate the administrative framework that would also attempt to wrest environmental authority away from Indigenous stewards and instead place it under the dominion of international security.

As a "strategic trust territory," the Marshall Islands remained under US administrative and/or colonial control, even after residents wrote a national constitution in 1978 and formed a government recognizable to the United Nations under the official name "Republic of the Marshall Islands" in 1982. The entrenchment of US military bases and the US's ongoing stakes in this strategic location meant that, politically, the RMI entered into a Compact of Free Association (COFA) wherein the US would be entirely responsible for the country's defense even though the Marshalls would retain its self-governing status and independent membership in the United Nations. In return, Marshallese citizens would also have access to move through US infrastructures and institutions as "free associates" of the US citizenry. Through the Compact, Marshallese citizens also gained access to annual grants from the US totaling about thirty million dollars per year. COFA is set to expire in 2023, but in August 2019, US Secretary of State Michael R. Pompeo flew to Micronesia and announced the US's intention to extend the Compact in the interest of also maintaining US military strongholds in the Pacific.[16] This Compact, to be clear, permits Marshall Islanders to live and work in the United States, as though they were citizens. The approximation of citizenship that characterizes "free association" may masquerade as a freedom, but the conditions under which this association has brought Marshallese into US institutional infrastructures are about as dismal as those afforded citizenship under the strictures of racialization and other forms of second-class citizenship. One need only consider the alarmingly disproportionate rates of infection and death among the Marshallese community in the United States in the ongoing Covid-19 pandemic to witness the unevenness of these rights to free association. The Marshallese have been extended the right to work in precarious jobs involving hard physical labor, such as meat-processing plant Tyson Foods, where the coronavirus has hit the Pacific Islander community especially hard.[17] They have been extended the right to travel the more than two thousand miles from Mājro to Honolulu to visit an oncologist, because there are to this day no resident oncologists in the RMI. Ongoing negotiations of these "rights" and access to sector grants already operate across precipitously uneven political terrain.

Rust's report in the *Los Angeles Times* mentions how the RMI has "recently secured a seat on the United Nations Human Rights Council, giving the nation another forum in which to raise its concerns."[18] If ever there were an occasion for international cooperation and global governance, it would be the call to environmental action at the planetary scale. However, as this essay has attempted to demonstrate, the very notions of sovereignty that undergird the nation-state unit comprising the United Nations produces a limited understanding of environment that impedes effective strategies for addressing climate change and global warming. The Trusteeship System evidences a deeply hierarchical formation, structured by settler notions of property, enclosure, and rights-based liberalism that lie at the heart of the UN infrastructure.

What US nuclear imperialism at the Marshall Islands in the mid-twentieth century really signifies to me is the spatial differentiation of not only the "strategic trust territory" but also the radiation ecology laboratory. Building on Ruth Wilson Gilmore's oft-cited definition of racism understood as "the state-sanctioned and/or extra-legal production and exploitation of group-differentiated vulnerability to premature death," cultural geographers Wendy Cheng and Rashad Shabazz look specifically to the "practice of racism through spatial differentiation."[19] The twin spatial differentiations of strategic trust territory and living laboratory are born simultaneously out of states of exception, midwifed by the discourse of securitization. Obfuscated by top secret documents and administered by a US-controlled Security Council branch of the UN, these forms of governmental and scientific enclosure would give rise to some of the most significant breakthroughs in environmental thought and research.

The Living Laboratory: The Pacific as Proving Ground

Trust. Evacuation. Cleanup. Containment. These concepts, arranged roughly in the order in which they were promised to the Marshall Islands, continue to pervade international political discourse despite clear historical evidence that such things are quite broken and/or impossible to deliver. The Marshall Islands served not only as "proving grounds" for nuclear weapons development but also for new forms of governance and ways of thinking about the environment in the contemporary world. I turn next to another form of enclosure, deeply imbricated with the strategic trust territory: the living laboratory.

The selection of the Marshall Islands as testing ground, as other scholars have already demonstrated, had everything to do with a promise of remoteness and relative enclosure.[20] These were notions caught up in the ideological formations of the laboratory itself as imagined to be hermetically sealed. Such ideas coincided conveniently with the securitization discourse taking hold at this same time. In its response to the April 20, 1954 Marshallese petition to put an immediate end to nuclear weapons testing, the UN Trusteeship Council emphasized its "right to close areas for security reasons … ."[21] Though somehow sealing off an archipelagic system makes for a good securitization fantasy, implementing such a feat would prove to be riddled with problems that point emphatically back to the fundamental misunderstanding of islands as being isolated rather than being interconnected by and with the ocean around them.

On March 1, 1954, the Castle Bravo hydrogen bomb, recognized as the worst nuclear disaster known to the planet including Chernobyl and the Nevada Proving Grounds, detonated with a force a thousand times more powerful than the Hiroshima bomb. With a fifteen-megaton yield, the explosion was two-and-a-half times what scientists expected. Radioactive fallout rained down on neighboring Roñļap (Rongelap) Atoll, where residents were neither evacuated nor sufficiently warned about the deadly effects of what looked like powdery snow falling all around them, coating trees, rooftops, and skin. Despite US officials knowing in advance about the shift in winds that would cause the fallout to reach Roñļap, and despite the fact that US servicemen were evacuated from the area in time, the Indigenous denizens of Roñļap were left to suffer the effects of this acute exposure to radiation, including bone-

deep radiation burns, extreme nausea, and hair loss. Following the Bravo shot, residents of Roñļap and Utrik atolls were enrolled in top-secret medical research programs sponsored by the Atomic Energy Commission. Once most of these documents were declassified under the Clinton administration in the early 1990s, ethnographers Barbara Rose Johnston and Holly M. Barker were able to point to piles of evidence indicating the long-term subjection of the Marshallese people to medical research on the effects of radiation on human subjects.[22]

Reading Johnston and Barker's *Rongelap Report* as well as Barker's ethnography *Bravo for the Marshallese* makes clear that while the initial harm and displacement wrought by nuclear detonations were already horrific, continued harm and displacement were enabled when military testing of nuclear bombs gave way to scientific testing of the effects of radiation on biological entities.[23] But "giving way" sounds far too passive for the purposive transformation of the Pacific Proving Grounds into a "living laboratory" as evidenced in Johnston and Barker's archival and ethnographic work.[24] The imbricated drives to develop nuclear weapons technology on the one hand and radiation ecosystems science on the other implicate how contemporary ecological thought may already be embedded in securitization frameworks.

Radiation ecosystems science would give rise to a "new ecology" that established the ecosystem (like the nation-state) as a discrete unit of analysis.[25] Often referred to as "the father of modern ecology," Eugene P. Odum would declare in 1964 that "the ecosystem is the basic unit of structure and function with which we must ultimately deal. … *The new ecology is thus a systems ecology*."[26] Historians of ecosystems science consistently point to the relationship between the atomic age and the age of ecology to identify a fundamental shift toward a *managerial* approach to environmental studies, wherein the "ecosystem engineer" would embody the idea of a system that could be controlled by human administrators—the very humans who had just irreversibly altered the planet through massive atomic and atmospheric nuclear weapons detonations.

One of the main reasons military scientists went to the Marshall Islands was the belief that nuclear fallout could be contained. Their insistent faith in concepts of enclosure and securitization enclosure is deeply connected to what critical ocean studies scholar Elizabeth DeLoughrey calls the "myth of isolates."[27] Tracing the intertwined histories of ecosystem ecology in the US and the Atomic Energy Commission, DeLoughrey argues that "American environmentalism and militarism are paradoxically and mutually imbricated particularly in their construction of the isolate."[28] Botanist Alfred George Tansley popularized the term "ecosystem" in 1935. "Key to this new conceptual rubric," writes DeLoughrey, "was the theme of isolation, a model that had been deployed in the 19th century to propose the theory of evolution, and which re-energized the longstanding colonial understanding of the island as a laboratory."[29] Building on various historians of ecosystem ecology, DeLoughrey explains the clear connections between this emerging branch of scientific inquiry and the study of atomic energy, down to the way the Atomic Energy Commission (AEC) funded a preponderance of the research around radiation ecology during the Cold War.

The selection of the Marshall Islands as a testing site for nuclear weapons, the relegation of its political status to a subnational strategic trust territory, and the subsequent

subjection of its people to scientific experimentation all track back to racialized notions of modernity, liberal possessive individualism, and settler colonial logics of elimination. Considering the declassified documents that Johnston and Barker called attention to in 2008, ample evidence points to multiple occasions of Geneva Convention violations involving the AEC's intentional experimentation on Marshall Islanders.[30] The Navy knew that the fallout from the devastating Bravo hydrogen bomb would, in the shifting winds, affect residents of Roñļap Atoll, but failed to evacuate them.

When considering the living laboratory of the Pacific Proving Grounds, it is helpful to consider the history of the atomic laboratory itself as one steeped in settler colonial ideation. According to an April 1952 memorandum, the Atomic Energy Commission chair had this to say regarding the possible resettlement of Pikinni Atoll: "From a health standpoint, Dr. Burgher advised that radioactivity on Bikini Island itself is very, very low … . Some of the fish around the island have appreciable amounts of radioactivity in their bones, but would be of no possible harm to the natives if they returned. It would be undesirable to volunteer any information on this latter point if it can be conveniently avoided, as there is some doubt as to the basis on which we would prevent the natives from returning." A racist diminishment of Marshallese people to comprehend the impact of radioactive fallout pervades the correspondences of US medical and government officials who continually comment on how unnecessary and "unsettling" these knowledges would be for Indigenous inhabitants.

These are settler logics that work to evacuate the Pacific of its inhabitants' ability to comprehend. It is disabling discourse that attempts to render the subaltern subject incapable of understanding radioactive fallout, even as Marshallese leaders readily describe in interviews the obviously deleterious effects on their communities of eating fish after the Bravo bomb. It is worth noting here that the "Atomic West" has always been informed by settler colonial ideologies. Bruce Hevley and John M. Findlay open their book *The Atomic West* relating the coded exchange between two scientists about the first self-sustaining nuclear reaction in Enrico Fermi's lab at the University of Chicago in 1942.[31] "You'll be interested to know," writes the physicist Arthur Compton to chemist James Conant, "that the Italian navigator [Fermi] has just landed in the new world. … [T]he earth was not so large as he had estimated, and he arrived … sooner than he had expected." Conant replies: "Were the natives friendly?" "Everyone landed safe and happy," answers Compton.[32] As Hevley and Findlay render clearly in this anecdote, settler colonial logics pervade the Manhattan Project at its testing sites in the US Southwest. What connects this 1942 coded exchange about Fermi's lab to the 1952 AEC memorandum about the resettlement of Pikinni Atoll is an unabashed reliance on anti-Indigenous views to sustain the intellectual space of the laboratory. The paternalistic arrogance of US imperialism that shows up here in the context of the Manhattan Project is consistent with the use of anti-Indigenous racism to rationalize the strategic trust territory. That so much of this discourse revolves around the purported *inability* of a racialized group to comprehend Enlightenment-based principles of self-possession is why a critique of settler environmentalism must also entail an engagement with critical disability studies.[33]

In my earlier work, I took interest in how human genome research pivoted from having its origins in the science of mutation (studying the transgenerational effects of radiation on

offspring of the survivors of Hiroshima and Nagasaki) to a more profitable set of investments in the science of gene therapy and the more profitable demographic of wealthy individuals who could have their genome mapped, sequenced, and then edited to prevent potential future disease.[34] The rhetorical shifts in genomics research from "mutation" to "regeneration," along with a decisive distancing of the Human Genome Project from the Manhattan Project, underlined how funding for the HGP capitalized on a conversion of atomic age radiation *trauma* into the potential for gene *therapy*. The research on the effects of irradiation on human gene mutation extended to the Marshall Islands, as geneticist James V. Neel secured three research contracts from the Atomic Energy Commission in 1951 to document the mutagenic response in blood proteins. Though the details of this research and its attendant data likely remain classified, Johnston and Barker point to enough evidence to suggest that Neel's work constituted the first known experiment involving the Marshallese as human subjects. Just as sequencing the human genome necessitated a "normal" genetic baseline from which to measure mutation, the study of radiation ecologies gave rise to the practice of establishing quantitative "environmental baselines" that would serve as a comparative guide for the environmental impact statements that the Environmental Protection Act required the AEC to provide.

Noticing an analog positivism-out-of-destruction conversion happening at the scene of the Pacific Proving Grounds is what compelled me to examine more closely how an ecosystem transformed into something that could be engineered (like genetic material), or an environment into something to be managed (like a security risk). In the strategic trust territory and the living laboratory, I see two figures of settler environmentalism, by which I mean a (doomed) paternalistic posturing of saving the planet and its most unwitting victims from ecological ruin, all while disavowing the disruption of Indigenous lifeways through military and scientific occupation. The history of the irradiated Pacific demands a decolonial approach to environmental studies, wherein the racism and ableism that subtends the legalized transformation of the Marshall Islands into a living laboratory can be understood as integral not only to the proliferation of harm but also to the rationale that prioritizes "experiment," "research," and "securitization" over protection and harm reduction in early environmental science. One painful truth to take away from the Marshall Islands is that the promises of environmental security have never been guaranteed.

The Ecosystem: False Promises of Enclosure

Along with its physical cracks, the story of Runit Dome bears the marks of the fissuring trust between the United States and the Marshall Islands. "The Tomb" is a prime example of the false promises of enclosure, containment, and "cleanup" that pepper biosecurity and even nuclear nonproliferation discourse today. After 1958, atomic or thermonuclear bomb detonations in the Marshall Islands would cease, though another twenty years would go by before Runit Dome was completed. Though the planning and precleanup surveys began in 1972, actual mobilization and implementation of the plans for Runit Dome would not begin in earnest until 1977, leaving the nuclear waste from those forty-three detonations lying around

exposed on Ānewetak Atoll for those intervening two decades. "Completion" of Runit Dome entailed multiple, last-minute additions of "highly contaminated debris" to the dome as well as two antechambers to contain "new 'red-level' debris" that washed ashore after the cap had been installed but before the cleanup crew left.[35] Even though, at an Environmental Protection Agency / Defense Nuclear Agency conference on August 8, 1974, Cactus Crater was estimated to hold only half of the projected 101,800 cubic yards of radioactive material, it was selected over the much larger Lacrosse Crater due to cost concerns.[36] The troubling consistency at every turn of the Atomic Energy Commission's deliberations is an argument that "additional damage that might be done was negligible compared to the possible damage that had already been done … ."[37] Despite the tremendous amount of labor and deadly exposure the cleanup effort took, the site has been leaking radioactive materials all along. Among the official government documents Rust studied in preparation for her *LA Times* article is a 1981 Defense Nuclear Agency report on the radiological cleanup of Ānewetak Atoll that indicates how government officials in 1975 clearly understood that the dome and the crater were leaking and "would continue to do so."[38] Indeed, "it was the consensus of all concerned … that Runit should remain quarantined indefinitely. There were no overt hazards … . However, the possibility would always exist that high levels of plutonium-contaminated subsurface soil could be exposed by wave or storm action."[39] And though Iroij (Chief) Johannes Peter was recorded at the Ānewetak Return Ceremony as declaring Runit Island off-limits, there is to this day no fence or sign prohibiting access to the dome.[40]

The precleanup engineering and radiological surveys of 1972 seem fraught with their own mishaps, fits, and starts, as decisionmakers grappled with subjecting government employees to dangerous conditions, as more plutonium-contaminated fragments were discovered, a ship overloaded with explosives "foundered, and sank a few hundred miles from Enewetak Atoll," and a District Court ruled that the cleanup activities on Ānewetak were in violation of both the National Environmental Policy Act (NEPA) and the Trusteeship Agreement.[41]

Signed into law in 1970, NEPA had an immediate impact on the AEC's nuclear licensing process, which now had to first prepare a detailed environmental impact statement before doing anything.[42] Used to operating without such environmental oversight, the AEC attempted to work the loopholes of NEPA in order to flout its new environmental responsibilities. The AEC argued that NEPA only required the Commission to *prepare* environmental impact statements rather than do anything with them. When called to court, the AEC received this statement from the judges: "We believe that the Commission's crabbed interpretation of NEPA makes a mockery of the Act."[43] The "Report by the AEC Task Group on Recommendations for Cleanup and Rehabilitation of Enewetak Atoll" was drafted and circulated for comment twice in 1974, causing one AEC office to recommend that "no numerical guides be published for residual plutonium levels in soil except those essential for guidance of a group of experts in the field to advise on plutonium cleanup operations."[44] Nineteen seventy was an environmental legislation turning point, as not only was NEPA signed into law, but the US also ratified the International Ocean Dumping Treaty that year, making ocean dumping of radioactive waste one less option for the Ānewetak Atoll cleanup plan. I relate this history of

environmental legislation to point out its concurrence with the deployment of ecosystems discourse. The cross-contamination of securitization concepts in both is revealing.

The year 1970 can also be understood to be the dawn of the age of ecology. Environmental studies scholar Laura J. Martin writes: "By 1970, ecosystems had materialized .... Beginning in the 1970s, many types of environmental management were reorganized as ecosystem management, including wilderness protection."[45] Martin's account of ecosystems management follows biologists to the Marshall Islands where they collect samples of marine life, use fish radioautographs to track how radioisotopes could be transferred from species to species, and procure funding from a think tank that financed ecosystems research by calling for predictive World War III scenarios in which an ecosystem would be measured for its vulnerability to attack. "Destruction," writes Martin, "thus became a standard method of studying ecosystems."[46] "The rise of ecology," she continues, "was not a response to the perception of environmental decline but one of its preconditions."[47] What I hear in Martin's conclusions is the troubling provocation that planetary-scale environmental harm became precisely the occasion for the popularization of ecological thought. To press the point farther, the uncomfortable convergence of nuclear proliferation and environmental conservation was not correlational but perhaps even causal, bound together by the impetus to promise containment of ecological fallout. Securitization thus becomes the rationale for both the destruction and the repair, for both debilitation and the demand to overcome.

Decolonizing Settler Environmentalism: From Enclosure to Relation

Linda Tuhiwai Smith opens her treatise *Decolonizing Methodologies* describing the impact of the word "research" on Indigenous peoples. "The ways in which scientific research is implicated in the worst excesses of colonialism remains a powerful remembered history for many of the world's colonized peoples," she writes. "It is a history that still offends the deepest sense of our humanity."[48] It is offensive. In the case of the subjection of the Marshall Islands and its peoples to the nuclear imperialism of the mid-twentieth century, "research" consisted of a devastating series of nuclear weapons tests as well as studying the effects of radiation on humans and environment without truly informed consent but with clear ulterior motives that advanced US power.

The histories of science, law, and epistemology that have coalesced around the Marshall Islands over the past seventy years or so present the entanglements of nuclear imperialism and the establishment of a settler environmentalism. Settler environmentalism names an approach to environmentalism that has historically positioned Indigenous people as strategically either part of the natural world and/or exceptional to it—as part of an ecological experiment and source of data, and in that subjection, as humans without as much political agency as the supragovernmental institutions tasked with regulating not only daily lives but also "the environment" itself. Settler environmentalism arises at a moment when science and the law were particularly close bedfellows in overlapping interests in securitization. A decolonial environmentalism must follow from a thorough epistemological shift in knowledge production, economic valuation systems, and international governance.

If securitization and enclosure were go-to methods of official state and international environmental actions and legislation in the mid-twentieth century, what other models of environmental ecosystems could we turn to as we recognize the severe limits of those frameworks? Candace Fujikane writes: "The struggle for a planetary future calls for a profound epistemological shift. Indigenous ancestral knowledges are now providing a foundation for our work against climate change, one based on … Indigenous economies of abundance—as opposed to capitalist economies of scarcity."[49] Building on Marxist critiques of accumulation by dispossession, Fujikane identifies a "settler colonial mathematics of subdivision," which she defines as "cartographies of capital [that] commodify and diminish the vitality of land by drawing boundary lines around successively smaller, isolated pieces of land that capital proclaims are no longer 'culturally significant' or 'agriculturally feasible,' often portraying abundant lands as wastelands incapable of sustaining life …. Such cartographies work to enclose and domesticate Indigenous places and their significance precisely because the seizure of land continues to be constitutive of the very structure of occupying and settler states."[50] In the case of the Marshall Islands, the settler colonial mathematics of subdivision took the shape of the trust territory, the living laboratory, and the ecosystem, largely to delineate units of neocolonial management and ecological containment.

Fujikane's call for "mapping abundance" resonates profoundly with Mishuana Goeman's emphasis on remapping settler spatial epistemologies. "(Re)mapping," writes Goeman, "is about acknowledging the power of Native epistemologies in defining our moves toward spatial decolonization," by which she means the imaginative possibilities of spatiality as a product of interrelations rather than geopolitical possession articulated through fixed boundaries.[51] These epistemological shifts—from scarcity to abundance, from settler enclosure to spatiality as interrelation—invoke decolonial feminist knowledge ways and organizing practices that enact forms of care, too often overlooked because they transpire at the intersection of economic, social, political, and cultural labors rather than staying confined to one officially recognized area of production.

US officials perceived the Marshall Islands as small in population, remote, and limited in resources. In this way, they diminished the significance of land, but as Johnston and Barker note, the valuation of these lands from Marshallese perspectives differed. "From a continental perspective, limited land meant limited resources—minimal agricultural production; no rivers, lakes, or streams; relatively few trees. From a Pacific Islands point of view, land provided access to an immense array of resources. … Critical resources included not only terrestrial and marine materials and foods necessary for basic survival but also the knowledge about how to use and exploit resources in sustainable ways."[52] Or, in the voice of those who expressed their concerns about the US nuclear weapons testing program in a petition to the UN Trusteeship Council in 1954, a little over a month after the Bravo bomb: "Land means a great deal to the Marshallese. It means more than just a place where you can plant your food crops and build your houses; or a place where you can bury your dead. It is the very life of the people. Take away their land, and their spirits go also."[53] This different accounting of the value of land demonstrates well a form of mapping abundance—of life rather than death.

In her account of the Marshalls, Barker takes care not to overromanticize the resilience of the Islands and the Marshallese. She notes that the 1,225 islands or so that make up the RMI may be low-lying and scattered; that the limited food and water resources may be very sensitive to the fluctuations brought on not only by seasonal change but also by climate change. However, she also remarks on how the Marshallese people rely "on specific and accurate knowledge of the local resource base. Instead of viewing their country as strips of dry land with scant resources, as did early anthropologists and outsiders, the Marshallese consider the surrounding seas and many islands as providing them with multiple opportunities to cultivate the resources necessary for survival."[54] I wonder how things might have transpired differently if the US nuclear imperialist state had listened to what the Marshallese already knew about their connections to seasonal winds and tides, food sources, and recent changes to those patterns.

Belittlement is how Tongan scholar Epeli Hauʻofa characterizes how the wealthiest, land-based, size-obsessed world powers diminish the political agency of Polynesia and Micronesia in his essay "Our Sea of Islands." [55] By consigning all of Oceania to stories of tiny confinement and isolation, these continentally biased valuations not only miss the wealth of resources that come from the seas and the networks that traverse and connect them; they also impose a narrow worldview that cannot afford to fathom the "difference between viewing the Pacific as 'islands in a far sea' and as 'a sea of islands.'"[56] Scholars who work on the Pacific often use Hauʻofa's "sea of islands" rejoinder to overturn Euro-American fetishization of land. But it is not only an inversion of land and sea that is needed; an intervention into settler environmentalism also requires a total reimagining of global relations.

Globalization as imagined by capitalism has already demonstrated keen interest in the oceanic. Even at its earliest moments, European juridical writing formulated a port-based, shipping lane–focused understanding of sea. Hugo Grotius's treatise on *mare liberum,* or the "free sea" was only meant to convey the freedom of various European (in Grotius's case Dutch and Portuguese) vessels to use the same shipping lanes, following the same ocean currents that facilitate expedient sea travel, without having to work out through war and/or contract which parts of the ocean fall under which sovereign nation's jurisdiction.[57] But in mapping these waterways as free to European trade, maritime law also rendered non-European sea voyaging as potential piracy and threat to the circulation of global capital as understood to be governed by European seafaring countries. In this way, maritime law was only ever designed with the European seafarer in mind. As Erin Suzuki puts it, "this declaration of the sea as an international commons, while broadly egalitarian in theory, in practice served to benefit certain constituents over others."[58] Again, as with the example of the United Nations and its hierarchal mode of governance vis-à-vis the Trust Territory of the Pacific, we see that this move to an international commons is actually an appropriative one that disappears Indigenous and other forms of sovereignty that go unrecognized by settler state and global powers.

The ethos of "mapping abundance" has me marveling at the extraordinary work of mutual aid and radical care practices that become highlighted when federal, state, or international political infrastructures fail. I want to highlight that one clear alternative to settler

environmentalism would be to unseat the principle of management from the primary throne of environmental legislation. What would it mean to overhaul environmental law, replacing not only capital-based incentives to decarbonize but also broken emissions trading systems with place-based economies that center the sustainable nourishment of people rather than the feeding of profit margins? Instead of incentivizing "individualized solutions to structural problems," we might, as Hiʻilei Julia Kawehipuaakahaopulani Hobart and Tamara Kneese suggest, "look to the way that Indigenous peoples and their allies have rearticulated their positions as protectors rather than protesters, emphasizing the importance of caring for and being good stewards of the earth."[59] With this feminist decolonial ethics of radical care in mind, I turn finally to one small but tremendous example of a shift away from settler environmentalism.

Remembering Beyond Death

Figure 2. Still from "Anointed (w/Subtitles)," video poem by Dan Lin and Kathy Jetñil-Kijiner.

Kathy Jetñil-Kijiner's "Anointed" impresses upon its audience the urgency of this radical turn towards abundance and resilience.[60] "You were a whole island, once," the poet rhapsodizes. "You were breadfruit trees heavy with green globes of fruit whispering promises of massive canoes. Crabs dusted with white sand scuttled through pandanus roots. Beneath looming coconut trees beds of ripe watermelon slept still, swollen with juice. And you were protected by powerful irooj, chiefs birthed from women who could swim pregnant for miles beneath a full moon."[61] These lines eulogize what has been lost, dwelling in the life conjured as response to the question: "How shall we remember you?"[62] Even as the poem documents the horrific forces of destruction that rendered the living island a tomb, "solidified history, immoveable, unforgettable," it continues to press beyond the seeming forevers of half-lives and burial—an act of persistence in and of itself.[63] The work is not done. The narrator goes on to ask: "Who remembers you beyond your death? Who would have us forget that you were

once green globes of fruit, pandanus roots, and whispers of canoes? Who knows the stories of the life you led before?”[64]

“Anointed” breathes life back into the pandanus fruit, the watermelon, and the coconut crabs—once staples of the Marshallese diet that now bear the risk of intensified radiation contamination. In the pages of Johnston and Barker’s *Rongelap Report*, numerous accounts of Marshallese unable to trust the nutrition of their food sources make clear how, whether or not Runit Dome crumbles and starts leaking mass amounts of radiation into the ocean, the devastation has already happened.[65] The “alienation of the body from land as a life blood,” as Goeman puts it, “distancing indigenous people from land, and destroying the cultural ways that nurtured relationship to land and their communities”—this is one of the most profoundly disruptive legacies of nuclear imperialism, and in “Anointed,” Jetñil-Kijiner attempts to repair, through loving, rapturous reconstruction, the nourishment that the land once delivered. [66]

“To get to this tomb,” she writes, “take a canoe.”[67] Taking a canoe to the tomb is part of this reparative process, like reactivating the actual routes as well as the associated knowledge ways that come from reading the waves, the stars, the winds, and the seasons. Because the poem is also a video poem, the opening shots of “Anointed” have the viewer rocking up and down with the choppy open ocean waters. It is an immersive experience, another kind of remediation. A close-up of the poet–activist’s hand curling around a rope provides just a brief glimpse into the tumultuousness of this journey—the strength required to hold tight as the violence of this history of nuclear imperialism rocks your entire being.

That strength must be held in tenuous relation between the speaker and the addressed. Forming the core rhythms of my favorite stanza is an insistent engagement of the second-person imperative: “Take a canoe through miles of scattered sun. Swallow endless swirling sea. Gulp down radioactive lagoon. Do not bring flowers, or speeches.”[68] These are instructions to prepare the voyager for a harrowing journey, the ramifications of which exceed the standard ceremonies. The speaker prepares us for the profound grief that cannot be contained by funeral proceedings or human scales of historical time. The poet prepares us for her turn to epic scales of myth and legend to fill the crater of disavowal and unacknowledged harm perpetrated by nuclear imperialism.

Reaching beyond the stories one might find while “researching” nuclear imperialism in the Marshall Islands, Jetñil-Kijiner interweaves Marshallese legends with the iconic images of the atomic age. Juxtaposing the legend of the turtle goddess Letao, the poem describes a shell anointed with “the power to transform into anything … even kindling for the first fire.”[69] When Letao gives her son a fragment of her shell as a gift, he “almost / burned us / alive.”[70] The video poem cuts at this point to footage of a mushroom cloud, then the “incinerated trees” and the “concrete shell that houses death.”[71] We are back at Runit Dome. Letao’s shell has transported us back here—the relating of the story, the sharing of the legend, a gift, a fragment, a poem that asks us to remember stories beyond death.

The poem’s insistence on the storytelling is unmistakable. And these are stories bound to a specific place; these are storied lands. The declaration of a space—the “Here is” —is part of another refrain: “Here is a story.” [72]The repetition, rhythmic like the undulations of the

canoe in the waves at the beginning, reminds us that the poem is also a journey, navigating a map of memories, wherein the Marshall Islands, rather than tiny dots and lines in a vast Pacific Ocean, are marked by this emphatic "here it is" that defies the forces of disappearance, of elimination.

"How shall we remember you?" At first, the most recent memories—the ones of great struggle against the onslaught of illness and the devastating effects of radiation on the body—those harsh and painful memories are most proximate and raw. But there can be healing to remember beyond death and to revisit the stories of life, especially as, in the context of nuclear imperialism, the practice of remembering works against the strategies of erasure that structure settler environmentalism.

Coda

Though a June 2020 Department of Energy report to Congress asserts that the containment structure of Runit Dome has lived up to its "intended purpose" of protecting contaminated material from "natural erosion" and poses no "significant source of radiation exposure relative to other sources of residual radioactive fallout contamination on the atoll," the Tomb remains deadly. The "other sources of residual radioactive fallout" include cesium-137 (137Cs) and alpha-emitting plutonium isotopes 239Pu and 240Pu with half-lives of twenty-four thousand years and six thousand five hundred and sixty years respectively. These are the toxic substances that not only contaminate the soil and groundwater around Runit Dome, but also get taken up by the pandanus fruit trees and the marine animals people rely on for sustenance.

The introduction of such dangerous and persistently radioactive materials into the food- and waterways ultimately means a long-term, if not permanent, disruption of Marshallese relationships to the land. Indigenous feminist scholars such as Mishuana Goeman, Noelani Goodyear-Ka'ōpua, Robin Wall Kimmerer, and Dian Million have written powerfully across a wide range of geographical and historical contexts about the importance of Indigenous relationships to land, air, and sea.[73] The interruption of these relations often occurs through settler colonial strategies of dispossession. Though the Marshall Islands were never earmarked for US settlement, US nuclear imperialism at the RMI remains an alarming example of how settler colonialism's "logic of elimination" can be executed through governmental instruments such as trust territories, extended through scientific mythologies of containment like the laboratory and the ecosystem, and perpetuated under the guise of environmental protection.

"Protection," though, in the context of nuclear imperialism, especially, is a fraught word. After all, the US developed nuclear weapons ostensibly to protect its citizens and allies from the prolongation of World War Two and the threat of Japanese military action in the Pacific. This essay's critique of enclosure, to be very clear, is not an antiscience argument against efforts to contain nuclear waste. Remediation, reclamation, and restoration of the Pikinni Atoll along with many other precarious nuclear waste sites should be a priority of any global environmental endeavor. My objection to enclosure is its misplaced faith in securi-

tization principles, managerial promises, and privatization enterprises that clash with what should be a fundamental imperative of environmental justice to approach the land, sea, and air of the planet not as discrete materials to be managed separately but as deeply interconnected phenomena that must necessarily put pressure on the jurisprudence of the possessive liberal individual and indeed of sovereignty itself. Unsettling the securitization approach to environmental futures requires ways of being in the world that honor interrelationality above enclosure, rethink modern political forms of governance, and demonstrate the kind of speaking with rather than speaking for the trees that Kathy Jetñil-Kijiner's poetry and activism model so well.

Notes

[1] Susanne Rust, "How the U.S. Betrayed the Marshall Islands, Kindling the Next Nuclear Disaster," *Los Angeles Times*, November 10, 2019, https://www.latimes.com/projects/marshall-islands-nuclear-testing-sea-level-rise/.

[2] Coleen Jose, Kim Wall, and Jan Hendrik Hinzel. "This Dome in the Pacific Houses Tons of Radioactive Waste—and It's Leaking," *The Guardian*, July 3, 2015, https://www.theguardian.com/world/2015/jul/03/runit-dome-pacific-radioactive-waste.

[3] Patrick Wolfe, *Settler Colonialism and the Transformation of Anthropology: The Politics and Poetics of an Ethnographic Event* (London and New York: Cassell, 1999): 27. While Wolfe's characterization of settler colonialism's logic of elimination emerges out of the Australian context and refers to an elimination that paves the way for replacement settler societies, the elimination in the context of the Marshall Islands manifests in the subjection of this Indigenous population to premature death via military-scientific experimentation that paves the way for ecosystems science and the ideation of environmental laboratories. While the technological method of elimination may differ, Wolfe's definition of settler colonialism's logic of elimination remains salient even as it seems to occasion calls to save the environment and provide aid to the Marshallese.

[4] "Again," because in March 1946, for example, the US military preemptively evacuated inhabitants of the Pikinni Atoll to clear the way for Operation Crossroads, a series of two fission bomb detonations—one atmospheric (Able) and one underwater (Baker). Both "exercises" spectacularly betrayed assurances of military and scientific predictive accuracy or safety. The Able bomb missed its target by half a mile, and the Baker bomb created such a bubble of radioactive sea spray that "cleaning up" the fallout was an impossibility that ended this series of tests before the third one could be executed. I learned of Dr. Fletcher's talk in conversation with Kathy Jetñil-Kijiner, who also writes about Fletcher's presentation on her blog: "Bulldozed Reefs and Blasted Sands: Rituals for Artificial Islands," *Kathy Jetñil-Kijiner*, February 7, 2019,

https://www.kathyjetnilkijiner.com/bulldozed-reefs-and-blasted-sands-rituals-for-artificial-islands/.

[5] As a matter of fact, dredging and reclaiming land are also undertakings that the US military brought to the Marshall Islands decades earlier to connect islands by filling in the *mejje*, or reef flats. See Jon Letman, "Rising Seas Give Island Nation a Stark Choice: Relocate or Elevate," *National Geographic*, November 19, 2018, https://www.nationalgeographic.com/environment/2018/11/rising-seas-force-marshall-islands-relocate-elevate-artificial-islands/

[6] Jasbir K. Puar, "Coda: The Cost of Getting Better: Suicide, Sensation, Switchpoints," *GLQ* 18, no. 1 (2012): 149–158. https://doi.org/10.1215/10642684-1422179.

[7] Puar, "The Cost of Getting Better," 154.

[8] Julie Sze, *Fantasy Islands: Chinese Dreams and Ecological Fears in an Age of Climate Crisis* (Oakland, CA: University of California Press, 2015): 18.

[9] La Paperson, "A Ghetto Land Pedagogy: An Antidote for Settler Environmentalism." *Environmental Education Research* 20, no. 1 (2014): 115. Under the pseudonym La Paperson, K. Wayne Yang uses the term "settler environmentalism" to describe efforts to preserve, restore, or improve "the environment" for the continued benefit of the settler state by claiming said environment as a planetary commons without acknowledging the history of land appropriation on behalf of extractive capitalism that leads to environmental degradation to begin with. I take interest in Yang's interventions into Marxist formulations of "the commons" as his characterization of the settler commons based on Native dispossession resembles how international environmental regulations could tend toward a similar "re-occupation" of that which was never commons to begin with but was stolen land instead. Yang's critique of the #OccupyWallStreet movement pushes environmentalist attempts to render the planet a commons beyond settler frameworks of property, possession, enclosure, and improvement.

[10] Brenna Bhandar, *Colonial Lives of Property: Law, Land and Racial Regimes of Ownership* (Durham, NC: Duke University Press, 2018). Bhandar explains how regimes of property ownership were underwritten by heavily racialized notions about modernity. She writes: "Land that required improvement was the result of its stewardship by people who required improvement; the colonial authority had the technology, vision, and, most importantly, the cultural habits and intellectual capacity to modernize spaces that had yet to become modern. Modern property laws defined according to particular types of cultivation and use emerged in conjunction with racial thinking that relegated indigenous people to the margins of civility and deprived them of the status

required to be owners of their land" (112–113). This racialized history of land improvement constitutes one key deployment of settler environmentalism.

[11] In addition to the previous note, see: Zakiyyah Iman Jackson, *Becoming Human: Matter and Meaning in an Antiblack World* (New York: NYU Press, 2020); Sylvia Wynter, "Unsettling the Coloniality of Being/Power/Truth/Freedom: Towards the Human, After Man, Its Overrepresentation—An Argument," *CR: The New Centennial Review* 3, no. 3 (Fall 2003): 257–337.

[12] Ralph Wilde, "From Trusteeship to Self-Determination and Back Again: The Role of the Hague Regulations in the Evolution of International Trusteeship, and the Framework of Rights and Duties of Occupying Powers," *Loyola Los Angeles International and Comparative Law Review* 31, no. 85, issue 1 (2009): 94.

[13] Kuan-Hsing Chen, *Asia as Method: Toward Deimperialization* (Durham, NC: Duke University Press, 2010): 8.

[14] Wilde, "From Trusteeship," 101.

[15] As Lisa Lowe argues, "the unit of analysis is the liberal nation-state in Europe or North America, but many of the newly independent nations after World War II and after decolonization do not quite conform to this normative unit of analysis. Built into the paradigm is a judgment that all nations should develop into a liberal democratic nation-state along the lines of the US model, so newly independent nations are cast as somehow more backward and not democratic enough. The mode of analysis masks its ideological content in the way in which it measures globalization, and argues that the ills of globalization would be solved if all of the nations were liberal democratic nation states along the lines of the US" (quoted in Jeffrey J. Williams, "The Wages of Globalization: An Interview with Lisa Lowe," *symplokē* 19, nos. 1–2 (2011): 358).

[16] Rust, "How the U.S. Betrayed the Marshall Islands."

[17] Alex Golden and Doug Thompson, "Marshallese Contracting, Dying from Covid-19 at Disproportionate Rate," *Arkansas Democrat Gazette*, June 14, 2020, https://www.arkansasonline.com/news/2020/jun/14/marshallese-contracting-dying-from-covid-19-at/?news-arkansas.

[18] Rust, "How the U.S. Betrayed the Marshall Islands."

[19] Gilmore qtd. in Wendy Cheng and Rashad Shabazz, "Introduction: Race, Space, and Scale in the Twenty-First Century," in "Race, Space, Scale," ed. Cheng and Shabazz, *Occasion* 8 (August 31, 2015): 3; Cheng and Shabazz, "Introduction: Race, Space, and Scale," 5.

[20] My thinking on this subject of the relationship between the atomic age and the age of ecology owes a great debt to Elizabeth DeLoughrey's work, which provides a deep

trail of references to follow in the meticulous notes. Special thanks to Eunice Sang Eun Lee who called my attention to DeLoughrey's article "The Myth of Isolates" at the Speculative Futures of Climate Change Symposium in November 2019.

[21] Barbara Rose Johnston and Holly M. Barker, *Consequential Damages of Nuclear War: The Rongelap Report* (Walnut Creek, CA: Left Coast Press, 2008), 18.

[22] See Johnston and Barker, *Consequential Damages of Nuclear War: The Rongelap Report*.

[23] Holly M. Barker, *Bravo for the Marshallese: Regaining Control in a Post-Nuclear, Post-Colonial World* (Belmont, CA: Wadsworth, 2012).

[24] Barker, *Bravo for the Marshallese*, 5.

[25] Joel B. Hagen, *An Entangled Bank: The Origins of Ecosystem Ecology* (New Brunswick, NJ: Rutgers University Press, 1992): 122.

[26] Eugene P. Odum, "The New Ecology," *BioScience* 14, no. 7 (July 1964): 15, http://www.jstor.com/stable/1293228.

[27] Elizabeth M. DeLoughrey, "The Myth of Isolates: Ecosystem Ecologies in the Nuclear Pacific," *Cultural Geographies* 20, no. 2 (2012): 167.

[28] DeLoughrey, "The Myth of Isolates," 168.

[29] DeLoughrey, "The Myth of Isolates," 168.

[30] Johnston and Barker, *Consequential Damages of Nuclear War*. For more horrifying accounts of uninformed, nonconsensual human experimentation from these declassified documents, see DeLoughrey, "The Myth of Isolates," 177.

[31] Bruce Hevley and John M. Findlay, eds., *The Atomic West* (Seattle and London: University of Washington Press in association with the Center for the Study of the Pacific Northwest, 1998).

[32] Bruce Hevley and John M. Findlay, "The Atomic West: Region and Nation, 1942–1992," in Hevley and Findlay, eds., *The Atomic West*, 3.

[33] While this article engages Puar's work on debility (Puar, "The Cost of Getting Better") and offers a critique of the ableist discourse intertwined with paternalistic accounts of Indigenous peoples in these examples, my book manuscript in progress will hopefully provide a more complete examination of how critical disability studies can intervene in settler environmentalism.

[34] Aimee Bahng, "Salt Fish Futures: The Irradiated Transpacific and the Financialization of the Human Genome Project," *Migrant Futures: Decolonizing Speculation in Financial Times* (Durham, NC: Duke University Press, 2018): 146–167.

[35] Rust, "How the U.S. Betrayed the Marshall Islands."

[36] Defense Nuclear Agency, *The Radiological Cleanup of Enewetak Atoll* (Washington, DC: Defense Nuclear Agency, 1981), 95.

[37] Defense Nuclear Agency, *Radiological Cleanup*, 96.

[38] The 700-plus-page-long 1981 DNA report also reveals how abruptly nuclear testing had been shut down in 1958, as the account describes returning in 1972 to "badly deteriorated test and support facilities, which had been evacuated in 1958 almost as if for a fire drill rather than the end of an era. On Medren, unfinished memos lay on the desks in some buildings, while land craft sat rusting where they had been pulled from the water" (64–65).

[39] Defense Nuclear Agency, *Radiological Cleanup*, 470.

[40] As this article is being drafted, a new US Department of Energy "Report on the Status of the Runit Dome in the Marshall Islands" (June 2020) has been prepared for Congress, perhaps in response to concerns raised after the publication of Susanne Rust's November 2019 *LA Times* article. Subsequently, Rust published a follow-up story. In the new article, Rust explains that in May 2019, Marshallese officials asked for such a fence but that the Department of Energy replied that they did not have the funding for such a complex project. See Susanne Rust, "US Says Leaking Nuclear Waste Dome is Safe; Marshall Islands Leaders Don't Believe It," *Los Angeles Times*, July 1, 2020. https://www.latimes.com/environment/story/2020-07-01/us-says-nuclear-waste-safe-marshall-islands-runit-dome.

[41] Defense Nuclear Agency, *Radiological Cleanup*, 66–67.

[42] Alvin L. Alm, "NEPA: Past, Present, and Future," *EPA Journal* (January/February 1988), EPA web archive, https://archive.epa.gov/epa/aboutepa/1988-article-nepa-past-present-and-future.html.

[43] Calvert Cliffs' Coordinating Committee, Inc., et al., Petitioners, v. United States Atomic Energy Commission and United States of America, Respondents, Baltimore Gas and Electric Company, Intervenor, Calvert Cliffs' Coordinating Committee, Inc., et al., Petitioners, v. United States Atomic Energy Commission and United States of America, Respondents, 449 F.2d 1109 (D.C. Cir. 1971), US Court of Appeals for the District of Columbia Circuit - 449 F.2d 1109 (D.C. Cir. 1971), https://law.justia.com/cases/federal/appellate-courts/F2/449/1109/240994/.

[44] "The Radiological Cleanup of Enewetak Atoll," Defense Nuclear Agency, 1981, in DTIC Technical Report, ed. Defense Logistics Agency (Alexandria, VA: Defense Technical Information Center, 1982), 75–76.

[45] Laura J. Martin, "Proving Grounds: Ecological Fieldwork in the Pacific and the Materialization of Ecosystems," *Environmental History* 23, no. 3 (July 2018): 584, https://doi.org/10.1093/envhis/emy007.

[46] Martin, "Proving Grounds," 583.

[47] Martin, "Proving Grounds," 585.

[48] Linda Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, 2nd ed., 1999 (New York: Zed Books, 2012): 1.

[49] Candace Fujikane, *Mapping Abundance for a Planetary Future: Kanaka Maoli and Critical Settler Cartographies in Hawai'i* (Durham, NC: Duke University Press, 2021): 4.

[50] Fujikane, *Mapping Abundance*, 6–7.

[51] Mishuana Goeman, *Mark My Words: Native Women Mapping Our Nations* (Minneapolis: University of Minnesota Press, 2013), 4–6.

[52] Johnston and Barker, *Consequential Damages of Nuclear War*, 59–60.

[53] *Petition from the Marshallese People Concerning the Pacific Islands,* UN Doc. No. T/Pet. 10/28 (1954).

[54] Barker, *Bravo for the Marshallese*, 10.

[55] Epeli Hau'ofa, "Our Sea of Islands," in *We Are the Ocean: Selected Works* (Honolulu: University of Hawai'i Press, 2008), 27–40.

[56] Hau'ofa, "Our Sea of Islands," 31.

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