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UNIVERSITY of WASHINGTON

TASK FORCE

The Donald C. Hellmann Task Force Program

Loom of the Future: Nuclear Decolonization and UW

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Loom of the Future: Nuclear Decolonization and UW

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The University of Washington acknowledges the Coast Salish peoples of this land, the land which touches the shared waters of all tribes and bands within the Duwamish, Puyallup, Suquamish, Tulalip and Muckleshoot nations. We humbly recognize that land acknowledgements are a way of spreading awareness about decolonization within colonial institutions; they are not all-inclusive, and they do not replace decolonial work.

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Executive Summary

With the Trinity test in 1945, the U.S. began a long history of damaging communities near testing sites. The veneration of nuclear weapons development as the keystone of national security provided the U.S. an unchecked privilege to absolve itself of accountability. Aided by both public and private institutions, the U.S. tested nuclear weapons on and near Indigenous lands, continuing a colonial structure of coercion, extraction, and violence. The University of Washington participated in these colonizing efforts by leading radiation studies and conducting extractive research in the Marshall Islands and Hanford, WA. In repairing colonial harms, the University of Washington must lead a transition to decolonization from within. In establishing its decolonizing framework, we propose that the University of Washington pursue the following actions:

- Create a website in collaboration with affected tribes and peoples with the information laid out in this Task Force and beyond surrounding the UW's nuclear history
- Utilize the UW's accumulated medical and research capabilities for communities seeking appropriate and affordable medical support
- Mobilize departments such as the UW Law School, Fisheries, and various science departments to support Hanford area tribes in resolving their stewardship rights as well as land decontamination
- Sponsor an on-campus art installation to commemorate and memorialize the suffering and resilience of people affected by nuclear colonialism
- Rematriate Indigenous artifacts and knowledge to their rightful owners
- Update curricula using the Diversity credit to reflect and inform the student body and faculty about the history of nuclear colonialism, in collaboration with Indigenous peoples

Introduction

Won Gyun Will Park, Tayler Smith, Naomi Weld

The Burke Museum

This report's cover features a Marshallese woven mat, with a pattern on the raised band symbolizing *jouj*, meaning "kindness." Since colonialism ravaged Marshallese traditions like weaving, this fabric acts as a conduit for Marshall Islanders to connect with their history. Today, the Burke Museum in the University of Washington (UW) stores the mat thousands of miles from its home in the Marshall Islands.

The Burke houses various works from the Marshall Islands, including woven sandals, shell necklaces, and fans made of dried grass and turtle shell. Many of these pieces date back to before the U.S. tested nuclear weapons between 1946 and 1958. After this period of destructive nuclear power and subsequent environmental

degradation, the grasses that the Marshallese people used to weave turned more brittle, and they lost the ability to weave such delicate patterns with local materials. The Burke also features an exhibit on the Hanford Site in Washington State, a former nuclear production complex that provided plutonium for the Manhattan Project, which developed the atomic bombs used in Hiroshima and Nagasaki. Displaying both sides of the history of U.S. nuclear weapons development, the Burke is a site of intersection between nuclear ambition and nuclear violence.

Furthermore, the Burke sheds a light on UW's distinct ties to U.S. nuclear history. For instance, UW's radiation research in the Marshall Islands and Hanford often involved extractive techniques that disregard Indigenous perspectives and amplify colonial violence. To date, the UW has not addressed its role in the system of nuclear harms and the school's profound involvement in nuclear colonization remains secret to its students and faculty members. However, the goal of this Task Force is not to pursue blame and condemnation; instead, our goal is to imagine and create a space for further education on nuclear colonialism. We endeavor to address disruptions between human and nonhuman kin, establish responsibility and networks of accountability, and contribute to sustainable relationships across disciplines, communities, and borders.

Nuclear Colonization

This report discusses the histories of nuclear colonization, its continued violence, and Indigenous peoples' resistance to nuclear colonialism. For the purposes of this Task Force, we define colonization as the ongoing process by which imperial states coercively impose their power on Indigenous peoples: including but not limited to violent displacement, genocide, forced assimilation, and systematic white supremacy. Today, structures of exploitation and violence reinforce colonialism, from borders to extractive industries, all of which serve the interests of the U.S. at the expense of colonized peoples.

Similarly, nuclear colonization includes all the processes that support and surround violent nuclear activities, both for power and for the development of weapons. These processes impact peoples and groups disproportionately; namely, Indigenous peoples and other marginalized groups routinely dispossessed and exploited for the

sake of nuclear states. Nuclear colonization therefore functions as an extension of settler colonialism, a system in which the state violates and extracts value from the land and the lives of Indigenous people. When states began developing and testing nuclear weapons, they created a system of threats and obscurities that conceal enduring harms and impose a narrative of dominance and national security.

Nuclear Decolonization

This report seeks to contribute to the work of nuclear decolonization. We understand decolonization as actions that disrupt colonial structures and contribute to the repair of colonial harms. We think with scholars Tuck and Yang in their insistence that "decolonization is not a metaphor," and our efforts are a modest contribution to the structural change that decolonization requires.[1] Our work is one step in a movement of healing through art, storytelling, building relationships across nations, and reviving traditional ways of life. Nuclear decolonization is the process of acknowledging, intervening, and disrupting narratives and actions reinforcing nuclear violence. In the U.S., nuclear weapons development and testing have been deified as the foundations of national security; this makes it difficult to deal with the weight of harm and keep nuclear colonization in the context of the broader settler-colonial project. We emphasize that the issues discussed in this report do not occur in isolation—nuclear colonization goes hand in hand with other extractive and destructive industries, as well as both literal and cultural genocide. Everything is connected: the land, the sea, the plants, the animals, the people who live with them, and violence enacted upon one of these is violence toward them all.

Yang, under the pen name la paperson, gives us a useful framework for understanding the dynamics of colonization and decolonization in his book *A Third University is Possible*. Yang theorizes that there are three universities.[2] The first world university is one like UW: research-focused, neoliberal, and built to educate its students

[1] Eve Tuck and K. Wayne Yang, "Decolonization is Not a Metaphor," Decolonization: Indigeneity, Education & Society 1, no. 1, (September 8, 2012).

[2] la paperson, "A Third University Exists within the First," *A Third University Is Possible*, University of Minnesota Press, 2017, https://doi.org/10.5749/9781452958460.

within the structure of empire-like expansion and accumulation by dispossession. The second world university is like a liberal arts college, which critiques the first world systems of dominance but essentially operates within the realms of the existing first world framework. In other words, it critiques but does not transform. The third world university is a strategic project that utilizes the first and second world knowledge but fundamentally aims to undo colonization through them. Therefore, the third world university "is not a decolonized university but a decolonizing one."[3]

In discussing nuclear decolonization, the description of colonialism as an ongoing process becomes particularly relevant. For instance, most sites of nuclear colonialism will not heal within our lifespans because of the cumbersome nature of radioactive decay. So-called "clean-up" efforts of these sites cannot cleanse nuclear waste in its entirety; rather, they relocate the effects of nuclear violence from one location to another. Therefore, the impact of nuclear activity is virtually never-ending, and clean-up will always be relative—is the land decontaminated *enough* to live on? Are the radiation levels *low enough* to risk having people back? Clean-up, therefore, is a misleading term since nuclear contamination will always be an ongoing process of mitigation and contention rather than a fresh start.

A Note on Structure

Contrary to Task Force tradition, this report will retain the individuality of its authors' voices. The chapters represent strands in the tapestry of our decolonial loom, interwoven to reveal connections and commitments. We acknowledge that nuclear governments obscure Indigenous knowledge; it is our intent to amplify Indigenous voices and not substitute for them, as well as avoid conforming to a knowledge hierarchy that prioritizes some voices over others.

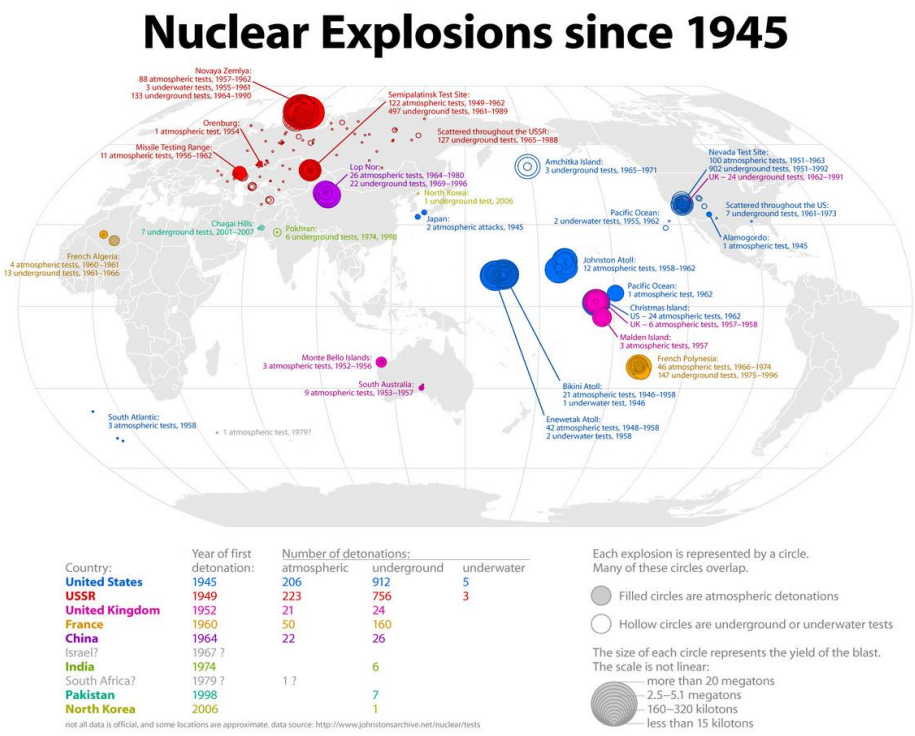
[3] la paperson, "Third University."

I. History of Nuclear Power, Role of Universities, and Indigenous Resistance

Contextualizing Nuclear Colonialism and Surrounding Discourses

Miles Benjamin Dutzik Henricks

Since 1945, there have been over 2,100 detonations of nuclear weapons around the world. Most of these detonations were conducted by four nations: the United Kingdom, France, Soviet Union, and the U.S. During the Cold War era after World War II, they viewed nuclear arms as a means to attain the global dominance necessary to spread their economic, cultural, and political agendas; their version of the "New world order."



World map depicting nuclear detonations since the year 1945, concentrated in Central Asia and in the South Pacific[4]

[4] Bill Rankin, "Nuclear Explosions," *Radical Cartography*, 2007, http://www.radicalcartography.net/index.html?nuclear. Accessed 17, 2022.

The U.S. government framed nuclear testing as a necessary security measure for both national and global security. That framing obscures how the detonations caused harm and damaged lives.

Nuclear History: An Abundance of Negligence

Nuclear weapons are often discussed exclusively in terms of the final product: the actual bomb. This view obscures the fact that an astounding amount of research and tests go into their development. Throughout the Cold War, NATO leaders like France, United Kingdom, and U.S. continuously developed more destructive atomic weapons to rival those of the Soviet Union. They tested their new weapons in various locations around the world to study their efficacy and their impact on the environment–including local people.

The process of developing and testing weapons has caused an immeasurable amount of destruction, contamination, and human suffering that nuclear states still underestimate or neglect entirely to this day. The pain and anguish witnessed after the Hiroshima and Nagasaki bombings represent the greatest horrors of nuclear weapons for most people in U.S., but this is largely because our leaders and governments refuse to accept and educate the people about the more wide-scale suffering caused by nuclear weapons production and testing.

Historically, nuclear states sought out locations for testing that had low population densities so that local resistance would be minimal, and information could be easily kept from the eyes of the public. Despite the remoteness of testing locations, contamination from nuclear fallout still impacted communities that were close enough, many of whom were Indigenous.

U.S. Nuclear Testing Program

The U.S. tested a vast majority of its nuclear weapons in two sites: the Marshall Islands in the South Pacific and the Nevada Test Site in rural Nevada. In total, U.S. detonated 1,088 nuclear warheads in these two places between 1946 and 1992.

Marshall Islands

The U.S. first tested on the Bikini Atoll in the Marshall Islands in 1946 after gaining control of the region during World War II. The islands were picturesque, peaceful, and naturally abundant with life. It would look and feel quite different after the U.S. tested sixty-seven nuclear weapons here in only twelve years (from 1946-1958).[5]

These tests were made possible by the coercive power the U.S. had over the region following the second world war. U.S. Nuclear scientists and government officials approved testing here due to the remoteness of the islands. On March 1, 1954, the U.S. government detonated the Castle Bravo, which created an explosion more than 1,000 times stronger than that of Hiroshima. Nuclear fallout blew directly over inhabited islands, such as Rongelap, and irradiated the land, water, food, and people of the Marshall Islands.

It took nearly two days for the U.S. government to evacuate Rongelap Island. Before the relocation, a scientist from the Atomic Energy Commission (AEC) stated, “It would be very interesting to go back and get good environmental data, when people live in a contaminated environment […] While it is true that these people do not live, I would say, the way Westerners do, civilized people, it is nevertheless also true that they are more like us than the mice.”[6] Rhetoric like this, especially the comparison of the Indigenous people to lab rats, indicates how the U.S. government deliberately chose to leave the Marshallese in a radioactive environment in order to study the effects of radiation on humans.

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[5] “Marshall Islands,” Atomic Heritage Foundation, https://www.atomicheritage.org/location/marshall-islands. Accessed February 10, 2022.

[6] “Marshall Islands.”

After three years of relocation, the U.S. military moved the Rongelapese back to their home, citing government studies showing radiation had dissipated to a safe level. However, twenty-eight years later in 1985, the Rongelapese were forced to leave again after it was discovered that radiation still existed on the island in significant amounts.

Nowadays, many of the Marshallese who lived during this period are either deceased or coping with radiation-caused diseases like cancer. More than half of the remaining Marshallese population lives on sixty-five acres of land in the capital of Majuro, largely in poverty and still ravaged by the long-lasting health and genetic consequences of radiation exposure.[7]

Nevada Test Site

The Nevada Test Site (NTS) was actively used for nuclear testing from 1951 to 1992, with 1,021 total tests conducted.[8] The former U.S. military base was chosen for its remote location in the Nevada desert and the paucity of farms and rivers nearby. Those who lived in the vicinity of the site were mostly rural farmers, some of whom were members of Native American tribes like the Western Shoshone and Southern Paiute.

NTS has a longer history than most, with both American and British detonations occurring here until the end of the Cold War. The most powerful bomb dropped in NTS was the Harry Shot, sometimes referred to as “Dirty Harry” because of the radiation it released. After Harry Shot’s detonation, Geiger counters – the most common radiation measurement instrument – over 140 miles away in St. George, Utah, the closest town to NTS, “experienced radiation spikes of 300 - 350 milliroentgens, fully maxing out some of the counters that were used.”[9] It was evident that heavy radiation traveled far enough from the site to reach populated areas and affect their inhabitants.

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[7] “Marshall Islands,” *The World Factbook*, Central Intelligence Agency, February 14, 2022, https://www.cia.gov/the-world-factbook/countries/marshall-islands/. Accessed February 10, 2022.

[8] “Nevada Test Site Downwinders,” Atomic Heritage Foundation, https://www.atomicheritage.org/history/nevada-test-site-downwinders.

[9] “Nevada Test Site Downwinders.”

Despite the clear existence of significant radiation, the U.S. government continued to assure downwind populations that they were safe, and that radiation was not a danger to them. What makes this situation exponentially more detrimental to their health is that many of those living near the NTS were subsistence farmers who ate irradiated food like vegetables, meat, and dairy. Had the government taken proper precautions, these people could have avoided not only the initial radiation, but also the continued accumulation of radioactive matter through their diet. The Western Shoshone and Southern Paiute Indians likely ingested more radiation than other populations by consuming more wild animals and fresh milk in accordance with their norms.[10]

The downwind communities affected by fallout from tests at NTS have seen the same high cancer rates and genetic abnormalities as the Marshallese and other irradiated communities, many of which can cause hereditary diseases whose effects are felt across generations. Another large group that was deeply scarred by nuclear testing was members of the armed forces. During U.S. nuclear testing, up to 400,000 U.S. servicemen were exposed to dangerous levels of radiation, with many of them developing thyroid cancer and other related conditions later in life.[11]

British Nuclear Testing Program

The British government's nuclear program was much smaller than that of the U.S., with twelve tests conducted in Australia, nine tests on Christmas Island in the Pacific, and twenty-four underground tests conducted jointly with the U.S. at the NTS.[12] Given the limited amount of land in its country, the British government resorted to testing locations in its former colonies, settling on a site in Australia called Emu Field.

Emu Field, Australia

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[10] Patricia George and Abel Russ, "Nuclear Testing and Native Peoples," *Reimagine*, https://reimaginerpe.org/node/165.

[11] "Atomic Veterans 1946-1962," Atomic Heritage Foundation, June 17, 2019, https://www.atomicheritage.org/history/atomic-veterans-1946-1962.

[12] Rankin, "Nuclear Explosions."

Emu Field is situated in the Great Victoria Desert, around 300 miles from the closest town of Woomera, which is composed of a mostly aboriginal population. On October 15, 1953, the U.K. tested its first weapon at the Emu Field Site.[13] The 9.1 kiloton bomb was named Totem I; an ironic name for a bomb that would send a 15,000-foot-high cloud of black mist wafting over the aboriginal Australian settlement of Walatinna, causing "their eyes to sting and their skin to break out in rashes. Others vomited and suffered from diarrhea."[14]

The aboriginal Australians living in Walatinna never got the message that they might be in danger. The U.K. delegated a single man to fill the role of "native patrol officer," who was assigned a region of 100,000 square kilometers (38,610 square miles) in which he was to notify all the Indigenous inhabitants of the upcoming tests and their dangers. Unsurprisingly, he failed to do so. Even this nominal forethought was too much for some, such as one senior British official who thought it was wrong that the patrol officer was "placing the affairs of a handful of natives above those of the British".[15]

Native Australians were devastated by health consequences in subsequent years, but they were not the only ones. In a 1999 survey of 2,500 British veterans who had been at the Maralinga/Emu Field Site, it was found that 30 percent of them had died, mostly in their fifties.[16] There were also higher rates of reproductive difficulty among veterans' children and much higher rates of skeletal abnormalities and spina bifida in grandchildren.

Kiribati (Christmas and Malden Islands)

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[13] "British Nuclear Program," Atomic Heritage Foundation, March 16, 2017, https://www.atomicheritage.org/history/british-nuclear-program. Accessed February 17, 2022.

[14] James Griffiths, "Australia Is Still Dealing with the Legacy of the UK's Nuclear Bomb Tests, 65 Years On," *CNN*, October 14, 2018, https://www.cnn.com/2018/10/14/australia/australia-uk-nuclear-tests-anniversary-intl/index.html. Accessed February 9, 2022.

[15] Griffiths, "Australia."

[16] "The United Kingdom's Nuclear Testing Programme," CTBTO Preparatory Commission, https://www.ctbto.org/nuclear-testing/the-effects-of-nuclear-testing/the-united-kingdomsnuclear-testing-programme/. Accessed February 17, 2022.

The later tests conducted by the U.K. after Emu Field took place in Kiribati in the South Pacific. Nine nuclear tests occurred here as a part of Operation Grapple in 1957 and 1958. Grapple X, a 1.8 megaton bomb, was detonated on November 8, 1957, producing a strong shockwave that demolished buildings and shattered glasses in local homes. Grapple Y, a 2.8 megaton bomb dropped on April 28, 1958, created radioactive rain that fell on nearby ships and inhabited islands.[17]

Like other people exposed to radiation, the inhabitants of Kiribati have been dealing with health consequences ever since the tests. Living on a remote island makes finding proper medical care for chronic diseases difficult, and many survivors have to travel to New Zealand or Australia for special treatment, if they can get treatment at all.

The testing at Kiribati also included the deliberate exposure of twenty-four unsuspecting Australian servicemen to excessive levels of radiation in so-called "protective clothing experiments."[18] Even more egregious, the U.K. government denies any wrongdoing. The U.K. Ministry of Defense maintains that "British servicemen involved in the U.K. nuclear tests received little or no additional radiation as a result of participation."[19]

French Nuclear Testing Program

After being excluded from a joint U.S.-U.K. nuclear development program, French President Charles de Gaulle said, "A great State which does not possess [nuclear weapons], while others have them, does not command its own destiny."[20] In the

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[17] Matthew Breay Bolton, "The Devastating Legacy of British and American Nuclear Testing at Kiritimati (Christmas) and Malden Islands," *Just Security*, May 11, 2018, https://www.justsecurity.org/56127/devastating-legacy-british-american-nuclear-testing-kiritimati-christmas-malden-islands/.

[18] "The United Kingdom's Programme."

[19] Bolton, "British and American Nuclear Testing."

[20] "French Nuclear Program," Atomic Heritage Foundation, February 14, 2017, https://www.atomicheritage.org/history/french-nuclear-program. Accessed February 10, 2022.

hope to “command its own destiny,” France began its nuclear program in one of its closest and most vast colonies: Algeria.

Algeria

France carried out seventeen nuclear tests near the towns of Ekker and Reggane between 1960 and 1966. General Charles Ailleret, who oversaw the project, stated “the total absence of all signs of life" was "essential in choosing the site" in Algeria.[21] Despite the French government’s claim that the Algerian Sahara is devoid of life, there was a town of 6,000 people as well as 6,500 French engineers, soldiers, and researchers and 3,500 Algerian manual laborers who were close enough to the site to experience radiation.

French Polynesia

After Algeria gained independence from France in 1962, the French government needed to find a new testing site. They chose French Polynesia to become France’s main testing ground, detonating 193 weapons here from 1966 to 1996.[22]

The French government assured the islanders that they would only conduct tests under favorable wind conditions and that evacuations would take place if needed. These ended up being empty promises as “tests exposed 90% of the 125,000 people living in French Polynesia to radioactive fallout.”[23] The 84,000 people living on the island of Tahiti some 1,500 kilometers away received over 500 times the maximum allowed dose of radiation due to “unexpected wind conditions” after being convinced they would be safe.

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[21] “France-Algeria Relations: The Lingering Fallout from Nuclear Tests in the Sahara,” *BBC News*, April 26, 2021, https://www.bbc.com/news/world-africa-56799670.

[22] “French Nuclear Program.”

[23] Adrian Cho, “France Grossly Underestimated Radioactive Fallout from Atom Bomb Tests, Study Finds,” *Science*, March 11, 2021, https://www.science.org/content/article/france-grossly-underestimated-radioactive-fallout-atom-bomb-tests-study-finds. Accessed February 17, 2022.

Patterns and Commonalities

Victims of radioactive fallout and other harmful repercussions of nuclear testing were forced to struggle for even the most basic acknowledgements from perpetrating governments. Victims in dire need of medical and financial compensation were, and still are, often challenged by strict compensation processes put forth by France, the U.S., and the U.K. France, for example, heavily censors and withholds information about nuclear testing from the public. They require claimants to prove that nuclear radiation caused their cancer and confirm that they were not impacted by other risk factors like smoking. The French committee overseeing compensation "rejected 97% – 1008 of 1039 – of claims made between 2010 and 2017," showing just how few victims are being supported by their government.[24]

It is crucial to note that all these countries operated their nuclear programs as far from their imperial cores as possible, consistent with a pattern of extractive colonization. The U.S., U.K., and France preferred to test nuclear weapons in foreign and colonial territories, often using Indigenous lands as nuclear laboratories and Indigenous populations as test subjects, resulting in irreparable environmental, cultural, and personal damages. Because it has been carried out in such secrecy, nuclear colonialism is less visible to the public than other forms of colonialism, but nevertheless represents a continuation of imperialist violence and oppression.

Discursive Hegemony

For some victims of nuclear tests, their voices have been literally taken away by the events they survived. Justina Langidrik, who is originally from Enewetak Atoll and lived in Marshall Islands during U.S. nuclear testing, is a traditional singer. She was diagnosed with thyroid cancer in 1984 and later had surgery to have her thyroid removed, which took away her singing voice. When interviewed, she softly uttered an inquiry common among the Marshallese, "Sometimes I wonder why all the people in the

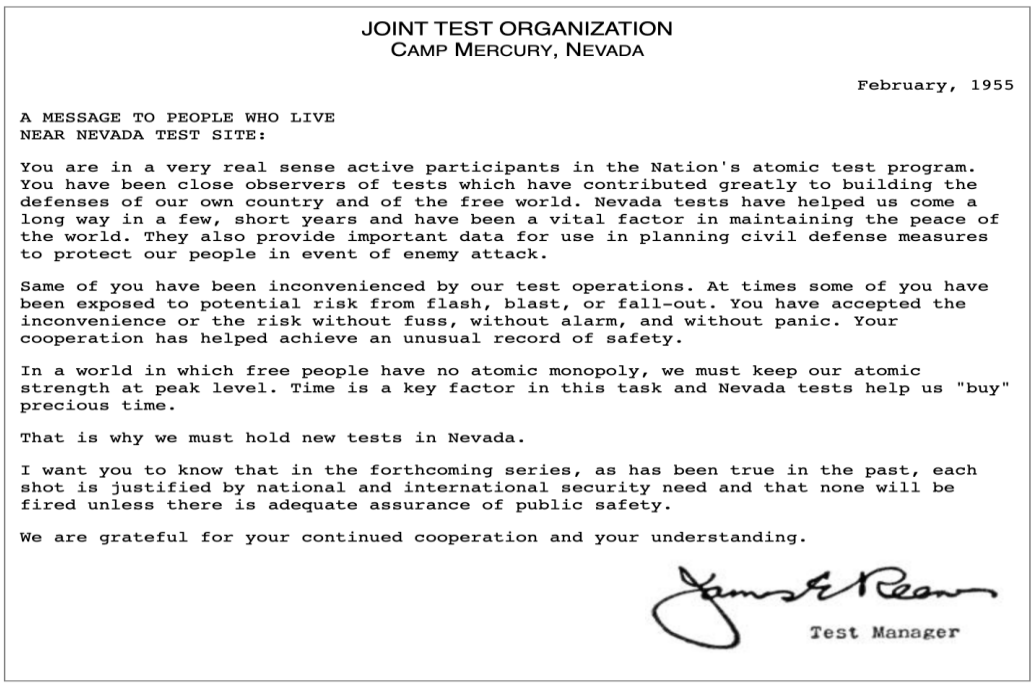
[24] Cho, "France grossly underestimated."

U.S. are not aware of what their government has done to these tiny islands."[25] This is the result of what James Rice calls "discursive hegemony," wielding power over what discourses are allowed and considered believable or legitimate.

Nuclear states took advantage of their monopoly on scientific information to deliberately spread misinformation about the dangers of their testing. They made rhetorical choices intended to minimize resistance to their programs. These governments did not want the public to understand the immense environmental and human consequences of nuclear testing because of the danger of slowing down the weapons development process.

Fortunately, much of the evidence of government dishonesty is available today to study, so we may better understand these discursive strategies to combat them in the future. One of the most glaring examples is a set of three pamphlets distributed by the Atomic Energy Commission (AEC) to downwind communities at the NTS before each set of nuclear tests was conducted in 1953, 1955, and 1957. The 1953 pamphlet's main letter directed to people living near the site is as follows:

[25] "In Marshall Islands, Radiation Threatens Tradition of Handing down Stories by Song," *Los Angeles Times*, November 10, 2019, https://www.latimes.com/projects/marshall-islands-radiation-effects-cancer/.



JOINT TEST ORGANIZATION
CAMP MERCURY, NEVADA

February, 1955

A MESSAGE TO PEOPLE WHO LIVE
NEAR NEVADA TEST SITE:

You are in a very real sense active participants in the Nation's atomic test program. You have been close observers of tests which have contributed greatly to building the defenses of our own country and of the free world. Nevada tests have helped us come a long way in a few, short years and have been a vital factor in maintaining the peace of the world. They also provide important data for use in planning civil defense measures to protect our people in event of enemy attack.

Same of you have been inconvenienced by our test operations. At times some of you have been exposed to potential risk from flash, blast, or fall-out. You have accepted the inconvenience or the risk without fuss, without alarm, and without panic. Your cooperation has helped achieve an unusual record of safety.

In a world in which free people have no atomic monopoly, we must keep our atomic strength at peak level. Time is a key factor in this task and Nevada tests help us "buy" precious time.

That is why we must hold new tests in Nevada.

I want you to know that in the forthcoming series, as has been true in the past, each shot is justified by national and international security need and that none will be fired unless there is adequate assurance of public safety.

We are grateful for your continued cooperation and your understanding.

James E. Reese
Test Manager

Message describing citizens as participants in a nuclear test program with assurance of public safety[26]

The AEC frames the cooperation of citizens in terms of patriotism and sacrifice by asserting that the Nevada tests have been "a vital factor in maintaining the peace of the world." They also reassure the readers that "each shot is justified by national security and that none will be fired unless there is adequate assurance of public safety." This was an effective way of making nearby communities feel secure and out of the way of danger so that they would cooperate with testing. Nuclear energy was a new concept to them, and these pamphlets gave supposedly in-depth, scientific explanations of the testing process and its side-effects. However, many of their claims have been debunked or disproven, proving that "testing states obscured these humanitarian consequences by claiming that […] radiation exposure has negligible health impacts and that socio-political forms of harm should be disregarded."[27] In a 1979 congressional inquiry about

[26] "Atomic Test Effects in the Nevada Test Site Region," United States Atomic Energy Commission, January 1955, https://www.fourmilab.ch/etexts/www/atomic_tests_nevada/.

[27] Matthew Breay Bolton, "Human Rights Fallout of Nuclear Detonations: Reevaluating 'Threshold Thinking' in Assisting Victims of Nuclear Testing," *Global Policy*, January 18, 2022, https://doi.org/10.1111/1758-5899.13042.

the NTS, it was concluded that, “All evidence suggesting that radiation was having harmful effects, be it on the sheep or the people, was not only disregarded but actually suppressed.”[28] In a separate lawsuit filed that same year, the judge ruled that the AEC “misled downwind residents […] and failed to adequately monitor radioactivity […] and educate residents as to the simple precautions necessary to minimize exposure.”[29] This last point is especially important in the case of the NTS, as the nearby residents often lived off of the land. Therefore, if only basic precautions and educational warnings had been pursued, radiation exposure could have been significantly decreased.

The U.S. was not the only government to use these discursive strategies of misinformation and secrecy. For the Aboriginal Anangu people of Australia, it has been a long-term struggle to gather data to prove the contamination of their land and people, and this is just the first step in being able to support and treat those who were harmed.[30] Nuclear governments are the hegemons of scientific information, and without that information, radiation-exposed peoples cannot confirm their condition. Therefore, even the speed of their healing is heavily controlled by the governments who have caused their damage.

Nuclear governments, especially the U.S., praise downwind communities’ cooperation, sacrifice, and contribution to the war effort. Yet these acknowledgements are nonexistent in the discussion of radiation-caused illnesses, environmental degradation, and other socio-cultural consequences of radiation exposure. As a research university, the UW could participate decentering the discussion of security and moving toward formal recognition of downwind communities’ health issues. Universities were integral in the perpetration of nuclear testing on colonized peoples, and now it is

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[28] United States, Congress, House, Committee on Interstate and Foreign Commerce, Subcommittee on Oversight and Investigations, “‘The Forgotten Guinea Pigs’: A Report on Health Effects of Low-Level Radiation Sustained as a Result of the Nuclear Weapons Testing Program Conducted by the United States Government,” U.S. Government Printing Office, August 1980.

[29] *Allen v. United States*, 588 F. Supp. 247 (D. Utah 1984).

[30] Gillian Aeria and Evelyn Leckie, “Fallout from nuclear tests at Maralinga worse than previously thought,” *ABC News*, May 22, 2021, https://www.abc.net.au/news/2021-05-22/maralinga-nuclear-particles-more-reactive/100157478.

time that they utilize their scientific and social expertise to help the people they have hurt begin the long road to recovery.

Academic Ties to Nuclear Colonization and Resistance Movements Within Academia

Matteo John Zanatta-Kline

The U.S. houses some of the most elite universities in the world. These higher education institutions produce a remarkable number of tremendously educated students, ready to use their newly engrained minds to expand their understanding of the world. These institutions and their lands help provide educational freedom and expansion for many people. However, universities also enable subjugation and exploitation over the atom. The U.S. nuclear testing discussed in the previous section was not carried out solely by the military; it required the participation of the nation's scientists, including scholars from top universities. By harnessing the power of splitting the atom and creating nuclear fusion, scientists could expand science and colonization simultaneously.

Nevertheless, they could not accomplish these tasks alone. The U.S. government and American scientists have been enlisting assistance from the top universities to help expand the field of nuclear colonization across the nation. With the incentive of monetary support, hundreds of universities in U.S. assisted in developing and testing nuclear weapons on Indigenous lands. While some no longer actively participate in such activities, others still play a crucial part in the U.S. nuclear sector. Whether past or present, academic institutions within the U.S. played a detrimental role in nuclear power colonization. Now, these institutions and their current student bodies can understand their colonial histories and determine the next steps.

Universities' Nuclear History

The atom is the smallest form of ordinary matter that forms a chemical element. It is the basis of our existence, but twentieth century revolutionary science turned the atom into a weapon of destroying life in epic proportions. This all began in a squash court, under the stands of Stagg field at the University of Chicago on December 2,

1942.[31] Leading up to this moment, the U.S. government feared that Germany was ahead of them in developing nuclear weapons. To combat German scientific dominance, Enrico Fermi led a group of U.S. scientists to split the atom, thus developing the first sustained nuclear reactor: Chicago Pile-1. While the president of the University of Chicago at the time claimed he did not know about the test, members of faculty were involved, specifically Professor Arthur Holly Compton, the former head of physical sciences at the university.

In July 1945, the reactor was moved to Hanford, Washington to meet the increasing needs of the rapidly growing project. The success of this reactor paved the way for nuclear energy, weapons, and the Manhattan project. More relevantly, it marked the beginning of universities' role in nuclear development and nuclear colonization. Following the success of Chicago Pile-1, the Manhattan Project set out with the goal of nuclear dominance, aided by the "Metallurgical Project" and its uranium research.[32] This project was a combination work among Berkeley Radiation Laboratory (“Rad Lab”) at the University of California at Berkeley, the SAM Laboratory at Columbia University in Manhattan, and the Chicago Met Lab at the University of Chicago. These "university partners" also supplied researchers for a secret laboratory in New Mexico.

The U.S. government designed and developed nuclear weapons at Los Alamos National Laboratory in New Mexico. In 1945, the first nuclear detonation was conducted approximately 200 miles south of the laboratory, polluting Indigenous lands where the Pueblo people had lived since time immemorial. Officials told them the laboratory would be a temporary settlement, but it soon became permanent, and the local tribes referred to it as the “lab on the hill.”[33] For its nuclear weapons development, the laboratory employed many members of the Pueblo tribe to perform low wage, high maintenance jobs. J. Robert Oppenheimer, the first director of the laboratory, was a professor at the

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[31] Louise Lerner, “The First Nuclear Reactor, Explained,” University of Chicago, n.d., https://news.uchicago.edu/explainer/first-nuclear-reactor-explained.

[32] “University Partners,” Atomic Heritage Foundation, June 4, 2014, https://www.atomicheritage.org/history/university-partners.

[33] “Native Americans and the Manhattan Project,” Atomic Heritage Foundation, June 18, 2018, https://www.atomicheritage.org/history/native-americans-and-manhattan-project.

University of California, Berkeley, who soon became a major figure in the Manhattan Project.[34]

Japanese Children's Day Carp Banners, Paguate Village, Jackpile Mine Uranium Tailings, Laguna Pueblo Reservation, New Mexico[35]

The three universities that formed the "Metallurgical Project" were not the only higher education institutions that aided the colonization of Indigenous lands for nuclear weapons. More than two dozen scientists on the Manhattan Project were former Princeton University faculty.[36] Under the guidance of Princeton Professor Nathaniel H. Furman, researchers purified and measured trace impurities in uranium concentrates as well as identifying uranium in ores. Henry DeWolf Smyth, the chairman of Princeton's physics department, worked on the separation of Uranium-238 and published the War Department's official report of the atomic bomb project. Furthermore, John Von

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[34] W. M. Dale, "The New World, 1939-1946: A History of the United States Atomic Energy Commission," *International Journal of Radiation Biology and Related Studies in Physics, Chemistry, and Medicine* 5, no. 4 (1962): 409-410, https://doi.org/10.1080/09553006214551001.

[35] Patrick Ryoichi Nagatani, *Japanese Children's Day Carp Banners, Paguate Village, Jackpile Mine Uranium, Laguna Pueblo Reservation, New Mexico*. Chromogenic print, 1993-1990, https://patricknagatani.com/.

[36] "The Manhattan Project," Nuclear Princeton, https://nuclearprinceton.princeton.edu/princeton-and-manhattan-project. Accessed February 9, 2022.

Neumann, a Princeton scholar, created the implosion design for the bombs dropped on Japan. By doing so, he replaced the previous gun-based design and created a more efficient and dangerous weapon. After World War II, this research continued at Princeton until 1952. Much of this research was kept classified until 1954.

The Princeton Herald August 10, 1945[37]

PRINCETON, N. J., FRIDAY, AUGUST 10, 1945

PRINCETON AIDS WITH ATOMIC BOMB

PUBLIC GATHERINGS CLOSED TO CHILDREN

Board of Health to Enforce Order Intended to Prevent Possible Spread of Polio Here

PLAYGROUNDS ARE CLOSED

MANY ON PROJECT ON FACULTY HERE

Based on Einstein Theory

Universities' Nuclear Role Today

While the U.S. has not detonated nuclear weapons upon Indigenous lands in nearly three decades, the U.S. government is still actively developing nuclear weapons with assistance from universities across the nation. Some universities have complete control over nuclear weapons design laboratories while others work with research institutions to find and teach the next generation. Some are even directly subsidized by the U.S. government to undertake fundamental research that is utilized in developing weapons. One of the main universities within the U.S. that control nuclear weapon laboratories is John Hopkins University in Maryland.[38] The laboratory, founded in 1942, receives most of their funding from the Defense Department, receiving 828 million

[37] "The Manhattan Project."

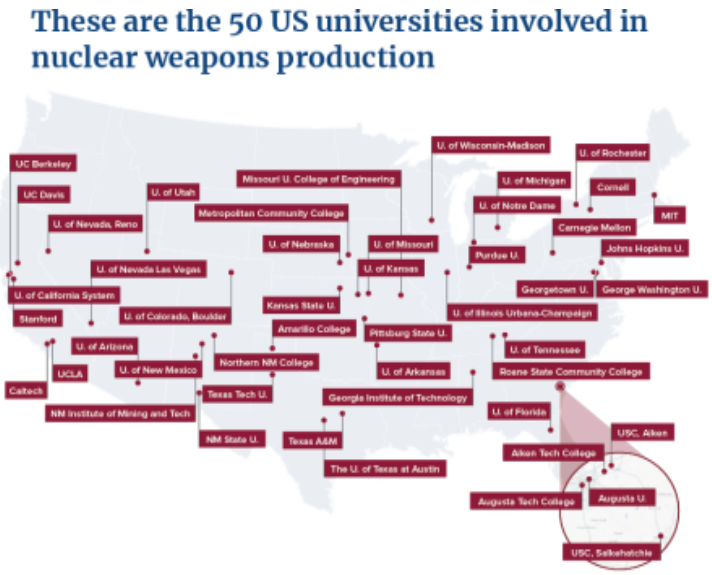
[38] "Universities List," International Campaign to Abolish Nuclear Weapons, https://universities.icanw.org/universities_list.

dollars in their 2017 fiscal year. The laboratories' current funding ceiling within its multi-year contract with the government was extended beyond seven billion dollars in 2019.[39] The university has been able to withhold much of the research coming from this lab from the students, staff, and the public by stating the lab is a non-academic division of the university.

Similarly, the University of California has been a part of nuclear weapon development since the beginning of the Manhattan and Metallurgical Laboratory. They continue to aid in the development of nuclear weapons in numerous ways. The University of California, Texas A&M University, and Battelle Memorial Institute are members of the Triad National Security. The US government awarded the triad a contract to assist in the operations at the Los Alamos National Laboratory.[40] The 2.48-billion-dollar contract allows the triad to assist in the design, engineering, and evaluations of nuclear warheads. University of California was also awarded a contract by the Lawrence Livermore lab, which gave the university a 1.56-billion-dollar contract for nuclear weapon development. Another recent contract awarded to the University from the Sandia National Laboratories is worth 18.5 million dollars, which allows the university to develop non-nuclear components of nuclear warheads.

[39] "John Hopkins University among schools furthering nuclear weapons," *The Baltimore Sun*, November 20, 2019, https://www.baltimoresun.com/opinion/op-ed/bs-ed-op-1121-universities-nuclear-weapons-20191120-m77eyfshsngizdmsbl64z3mm7a-story.html.

[40] "University of California," International Campaign to Abolish Nuclear Weapons, https://universities.icanw.org/uc_california. Accessed February 9, 2022.



Graphic from The International Campaign to Abolish Nuclear Weapons (ICAN), shows the top fifty universities in the nation that are involved and profit from the development of nuclear weapons[41]

Nuclear Curriculum

While discussion of nuclear weapons has become ubiquitous in the U.S. since the invention of the atomic bomb, real education surrounding the topic has never occurred. The history of and lasting damages incurred by nuclear activity remain unknown to most of the public, partly because they are rarely addressed in an educational setting. A study conducted by the "Bulletin of Atomic Scientists" at a school near the nuclear power plant in Hanford, Washington, where most of the plutonium used in the Manhattan Project was produced, found that less than 1% of the 1,100 participants knew which countries possess nuclear weapons.[42] This is concerning not only because of how close these children are to the massive nuclear waste stored near

[41] "These are the Universities that help to build U.S. nuclear weapons," International Campaign to Abolish Nuclear Weapons, https://universities.icanw.org/.

[42] Sara Kutchesfahani, "What's Missing from American Schools' Curricula? Nuclear Weapons.," *Bulletin of the Atomic Scientists*, September 3, 2020, https://thebulletin.org/2020/09/whats-missing-from-american-schools-curricula-nuclear weapons/.

the site, but also because the U.S. currently possess over 3,800 nuclear warheads and plan to spend an additional 1.2 trillion dollars on them in the next thirty years.[43] This generation of students will one day be in control of the largest arsenal of nuclear weapons on the planet without receiving related education.

Activists are wondering why nuclear weapons and colonization are not commonly taught within schools. Sarah Bidgood, the director of the Eurasia Nonproliferation Program at the James Martin Center, has been consistently warning about the dangers of the current generation's lack of education on this topic. She stated in an article that with this level of negligence, the “branches of government responsible for nonproliferation and disarmament will be unable to do their work.”[44]

Currently, there are many organizations actively trying to implement nuclear weapons into middle and high school curriculums. An example of this is *High Enriched,* a foundation which provides lesson plans on the topic of nuclear colonization to teachers at no cost. While higher education institutions do provide more of a basis on nuclear development within their curriculum, there is still a general lack amongst colleges and universities. Because of this, *The Stanley Foundation* offers ten grants to undergraduate and graduate related courses. The foundation states that “these grants provide approximately $35,000 to cover summer salary plus additional funds to cover course material, guest speakers, or other costs.”[45]

Nuclear Resistance

As the digital age emerged, so did information on the U.S. and academic

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[43] Matt Korda and Hans Kristensen, “Nuclear Notebook: United States Nuclear Weapons, 2021,” *Bulletin of the Atomic Scientists*, January 12, 2021, https://doi.org/10.1080/00963402.2020.1859865.

[44] Kutchesfahani, “What’s Missing.”

[45] “Course Development Program,” Stanton Foundation, https://thestantonfoundation.org/security/course-development. Accessed February 9, 2022.

institutions' contributions to nuclear colonization. Students at John Hopkins University found out about their university's role in nuclear colonization and the development of nuclear warheads.[46] Students were disappointed to find out that their university receives billions of dollars from the government, while their fellow students live below the poverty line and accumulate thousands of student loan debt every year. Students and faculty also believe people will lose trust with the university if more people find out about the university's nuclear ties, which could affect the great strides in other scientific research sectors like COVID-19.

John Hopkins is not the only major university facing backlash from their current student population. The University of California is facing a response from their students about their aid in developing the nuclear bombs dropped on Japan. Within their school newspaper they stated, "The relationship between war and education must be seriously reevaluated."[47]

Nevertheless, there are movements within universities that are taking great strides in accepting their past and figuring out how to move forward. Students at Princeton University have created their own undergraduate directed program on campus, *Nuclear Princeton*. Their mission statement says that "By illuminating Princeton's involvement in such projects and how marginalized communities were impacted, this project hopes to open conversations about the politics of science and the (often buried) consequences of scientific research."[48] They have been working with local Indigenous tribes to create a dialogue about nuclear colonization and find ways for both the tribes and the

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[46] Min-Seo Kim and Chris H. Park, "Protesters Call on Hopkins to Drop Nuclear Weapons Research," *The Johns Hopkins News-Letter*, January 27, 2021, https://www.jhunewsletter.com/article/2021/01/protesters-call-on-hopkins-to-drop nuclear-weapons-research.

[47] Carley Weiler, "Behind the Bombs: Exposing Our University's Relationship with Nuclear Weapons," *Daily Nexus*, January 23, 2020, University of California, Santa Barbara, https://dailynexus.com/2020- 01-23/behind-the-bombs-exposing-our-universitys-relationship-with-nuclear-weapons/.

[48] "Mission Statement," Nuclear Princeton, https://nuclearprinceton.princeton.edu/mission-statement.

university to move forward. They conduct seminars and have even created their own class which began on January 24, 2022. According to the syllabus, "students will use perspectives from Indigenous studies to critically approach the intersection of Princeton's history, nuclear science, settler colonialism, and environmental racism to collectively imagine a more holistic approach to studying science and the environment."

Logo of *Nuclear Princeton*, designed by Jessica Lambert, "the intersection between Indigenous peoples, nuclear things, and Princeton University"[49]

Conclusion and Future

We cannot change the past. For the rest of their existence, major universities must face the consequences of their actions and the ways in which they contributed to the death of thousands of innocent people as well as the plunder and destruction of Indigenous lands in the pursuit of nuclear power. These wounds can never fully heal, but universities can make changes to put an end to such violence. For this to occur, they must accept responsibility for their actions and begin to make amends not only with their student body, but also with the Indigenous populations whose lands they unrightfully used and forever scarred. By following the steps of *Nuclear Princeton*, universities can begin the process of finally accepting responsibility. Furthermore, by educating the future generations on the perils of nuclear weaponry and the colonization that follows, we can ensure future generations will continue healing and avoid the same mistakes.

[49] Jessica Lambert, *Nuclear Princeton Logo*, https://nuclearprinceton.princeton.edu/our-logo.

Indigenous Rights and Resistance to Nuclear Colonialism

Max Kawaguchi

By attempting to develop new war technologies such as atomic bombs, the U.S. has produced lethal landscapes that have and will continue to affect Indigenous communities for generations to come. Environmental justice activists tend to focus on "spectacular, catastrophic events rather than on the quiet, unspectacular, and frequently indefinite nature of health risks that unfold gradually over the course of years."[50] For example, in the case of war, media coverage focuses on battlefield casualties but rarely details the devastating effects incurred on Indigenous peoples or the lands, which bear the long-term environmental aftermath of conflicts. In *Slow Violence and the Environmentalism of the Poor*, Rob Nixon, a Professor in the Humanities and Environment at Princeton University explains that "each war generates a distinctive, historically specific chemical, radiological, epidemiological, and environmental legacy."[51] These effects are often kept hidden from the American public, as morally reprehensible experiments like Project 4.1, also known as the "Study of Response of Human Beings exposed to Significant Beta and Gamma Radiation Due to Fall-Out from High Yield Weapons" are unknown to the general populace in U.S. This nuclear testing program led to the testing of sixty-seven bombs in the Marshall Islands between the years of 1946 to 1958, exposing inhabitants to 1.7 times the radiation of the bomb dropped on Hiroshima, Japan during World War II.[52] But the program was not limited to weapons

[50] H. L. Hsu Hsu. "Aftermaths," *Environment & Society Portal*, August 18, 2021, https://www.environmentandsociety.org/exhibitions/risk-and-militarization/aftermaths. Accessed February 11, 2022.

[51] Rob Nixon, *Slow Violence and the Environmentalism of the Poor*, Harvard University Press, 2011.

[52] *U.S. Government Printing Office*, "Nuclear Testing Program in the Marshall Islands," Hearing Before the Committee on Energy and Natural Resources United States Senate. U.S. Senate, July 19, 2005, https://www.govinfo.gov/content/pkg/CHRG-109shrg24536/html/CHRG-109shrg24536.htm.

testing; as the name suggests, part of the aim was to discover what kind of long-term effects the Marshallese people would suffer from their exposure to radioactive material.

However, nuclear colonialism also affects Indigenous communities in U.S. From 1951 to 1992, U.S. tested nuclear weapons on the homelands of the Western Shoshone people in Nevada, once again using Indigenous land as a place for nuclear experiment and exposing their sacred environment to the world's most dangerous weapons.

Thousands of miles away in the Pacific, thousands of Micronesians have relocated to the state of Hawaii after testing on their native lands. Anti-Micronesian sentiment is widespread across the islands of Hawaii, as local communities see Micronesians as burdens and drains on public systems and resources. If those communities had a better understanding of U.S. nuclear history, then there would be much more empathy and support for the displaced peoples. The destruction by nuclear testing has annihilated environmental landscapes and resources necessary for Micronesians to survive, leaving Pacific Islanders with few economic alternatives but to accept the toxic waste that has plagued their land because of developed nations.

Marshall Islanders

There is no Indigenous group as deeply affected by nuclear colonialism as those in the South and Central Pacific Islands. 2022 marks the 76th year that people of Bikini Atoll have lived in exile from their homeland. The U.S. government tested "Castle Bravo," the largest bomb ever detonated in US history, on Bikini Atoll in 1954. At fifteen megatons, the explosion vaporized three islands and wiped out their entire future.

Operation Crossroads Baker Atomic Test, 25 July 1946, with eighty-eight experimental target vessels. Photograph taken from a tower on Bikini Island, 5.6 kilometers away[53]

In 2013, Jessica A. Schwartz, a Ph.D. researcher from NYU, co-founded the Marshallese Educational Initiative, an Arkansas-based nonprofit which develops intercultural pedagogy and outreach through projects such as the Marshallese Oral History project.[54] The Marshallese Oral History Project sought to preserve oral histories and respectfully educate the public about Marshallese history and culture. Working together with young Marshallese activists, they were able to interview fifty members of the Marshallese community to speak on their culture and archive elders' stories, which were slowly being lost. Marshall Islanders were part of Project 4.1, a top-secret US government operation documenting the effects of radiation on human beings. Numerous men and women suffered severe thyroid problems in the Marshall Islands, as well as cancer issues that required extensive surgeries and operations.

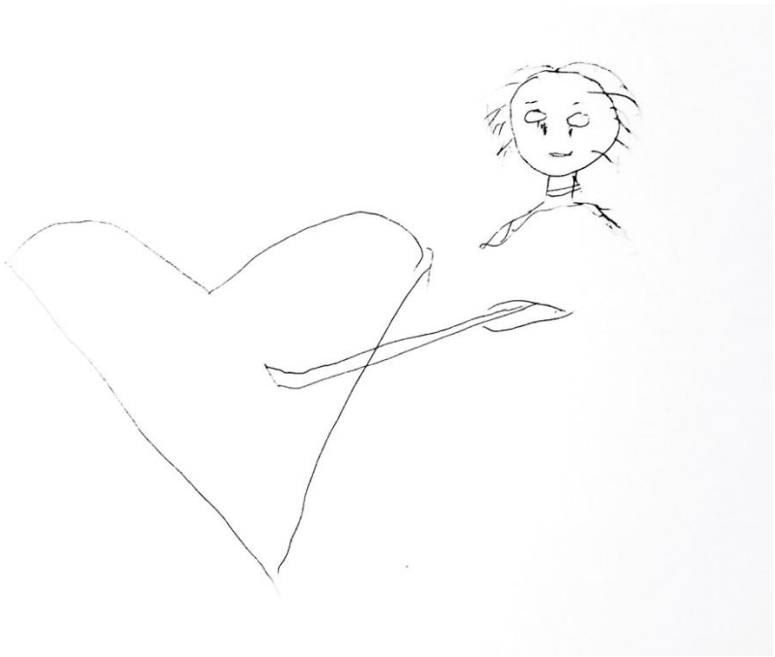
While these health issues will continue to alter the genes of Indigenous communities in the South and Central Pacific islands for years to come, the problem goes deeper than illness. Schwartz notes that "[Marshallese] women would not speak or sing for periods of time after the surgeries in fear of hearing their altered voices and

[53] NARA, *Still Pictures Unity*, Record Group 374-G, box 7, folder 60, 1946.

[54] Jessica A Schwartz, "Matters of Empathy and Nuclear Colonialism: Marshallese Voices Marked in Story, Song, and Illustration," *Music and Politics* X, no. 2, 2016, https://doi.org/10.3998/mp.9460447.0010.206.

enduring a gendered stigmatization."[55] Neisen Laukon, a woman from Rongelap Atoll, talks about her return to her homeland when the U.S. government deemed Rongelap Atoll safe to inhabit. The food caused swelling of the lips and blisters around her mouth. The Department of Energy (DOE) flew her to U.S. to receive medical treatment, including a box full of medications they claimed would improve her condition. Despite the fact that she continued to develop growths and have frequent nose bleeds, the DOE refused to acknowledge any causality between the radiation and her health problems. When Laukon was asked to draw the sound of "thyroid," she produced the below image and said the following about her cousin Jonitha:

> My cousin was really scared whenever they said they were going to cut her throat. She said I may never talk […] mute, you know. Sing. They can't sing and she was scared. The woman is down and out, depressed. Tears. How do you draw, or write, in that emotion? It's like a knife, or a stick through the heart. The woman–she had a sad face. She is crying, and this represents the emotion. Scared, hurt, angry.[56]



[55] Schwartz, "Matters of Empathy."

[56] Neisen Laukon, *Heart Outside Body*, Springdale, Arkansas, October 8, 2014.

Drawing, Neisen Laukon, *Heart Outside of Body*

These nuclear affected voices are a testament to the largely unrecognized suffering of Indigenous communities in the South and Central Pacific Islands, as the peoples affected by the pursuit of nuclear knowledge have been subjected to the extraction of human parts and the mining of their bodies.

Nevada

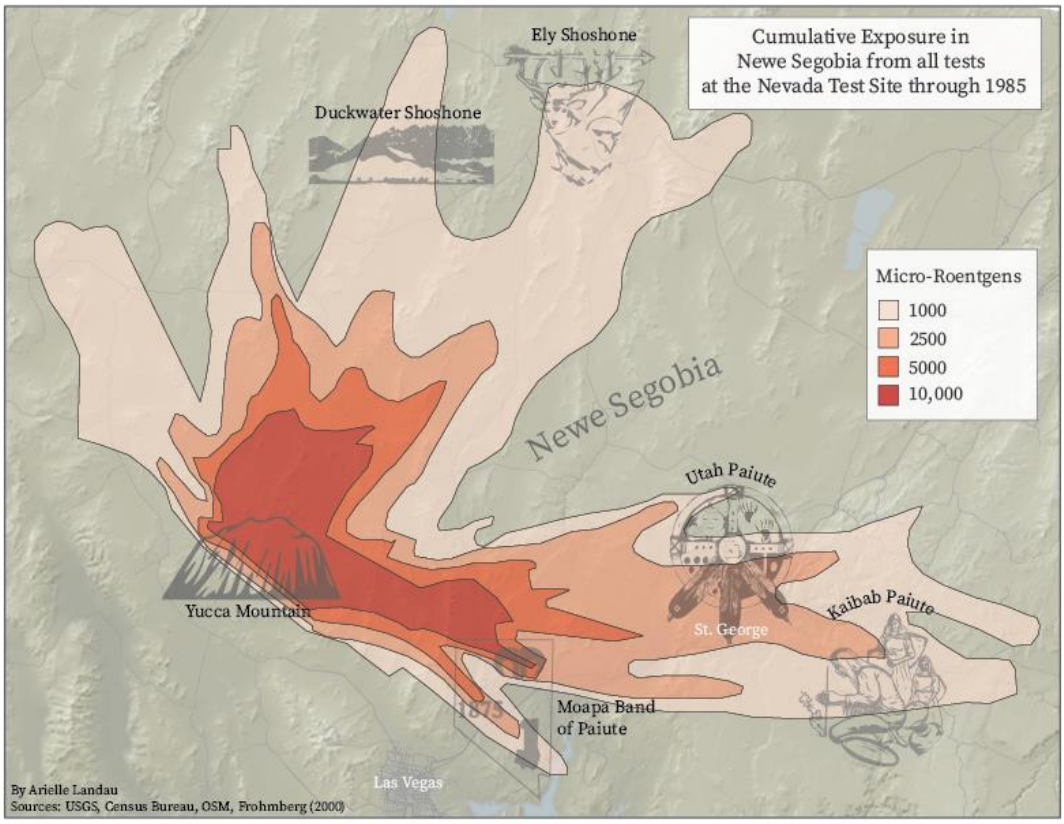
The state of Nevada also plays a significant role in this story, as the U.S. government carried out nuclear tests on the homelands of the Western Shoshone from 1951 to 1992. Between the years of 1949 and 1992, U.S. detonated 1,149 nuclear devices, 1,000 of which took place on traditional homelands of the Western Shoshone peoples. To Indigenous people of this area, the land was called *Newe Segobia*, meaning “Peoples’ Mother Earth,” but it was soon deemed the Nevada Test Site by the U.S. government. In 1951, President Truman forcibly relocated one hundred Native American families away from their home.[57] U.S. used Western Shoshone land in the interest of protecting their citizens from foreign threats, yet by doing so, they put their own people at risk of nuclear fallout and killed hundreds of thousands. A study from 2017 estimated nuclear testing fallout “contributed to between 340,000 to 460,000 excess deaths from 1951 and 1973.”[58] Though such injustice occurred domestically, they were blatantly disregarded or even covered up in the name of national security. The reason nuclear testing constitutes an environmental injustice is because of “the physical and emotional intergenerational trauma caused through changing the very genes of the Indigenous people exposed to fallout, as well as turning their local communities dangerously radioactive.”[59] To demonstrate how life-threatening these

[57] Robert Jacobs, "Nuclear conquistadors: military colonialism in nuclear test site selection during the Cold War," *Asian Journal of Peacebuilding* 1, no. 2 (November 2013): 157-77.

[58] M. Finaud, “75 years later, nuclear weapons still kill,” *Geneva Centre for Security Policy*, August 6, 2020, https://www.gcsp.ch/global-insights/75-years-later-nuclear-weapons-still-kill. Accessed February 11, 2022.

[59] Jacobs, "Nuclear conquistadors.”

lands become, refer to the image below that shows cumulative exposure in *Newe Segobia* from all tests at the Nevada Test Site through 1985.



Cumulative Exposure of Local Populations in Newe Segobia. Counter map of cumulative estimated exposure (mR) for all tests at the Nevada Test Site through 1985. Symbology for the Shoshone and Paiute tribes were traced from images on each tribe's official website.[60] Radiation isodoses derived from outside source[61]

As a result of this, Indigenous communities deal with severe health problems and deadly diseases. Indigenous peoples exposed to radiation as children now suffer the consequences, as they experience twice the thyroid cancer risk of non-native people.[62]

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[60] Arielle Landau, "Nuclear testing in Newe Segobia, Western Shoshone Lands, Nevada, US," *Environmental Justice Atlas*, October 5, 2021, https://ejatlas.org/conflict/nuclear-testing-in-newe-segobia-western-shoshone-lands-in-nevada-us. Accessed February 10, 2022.

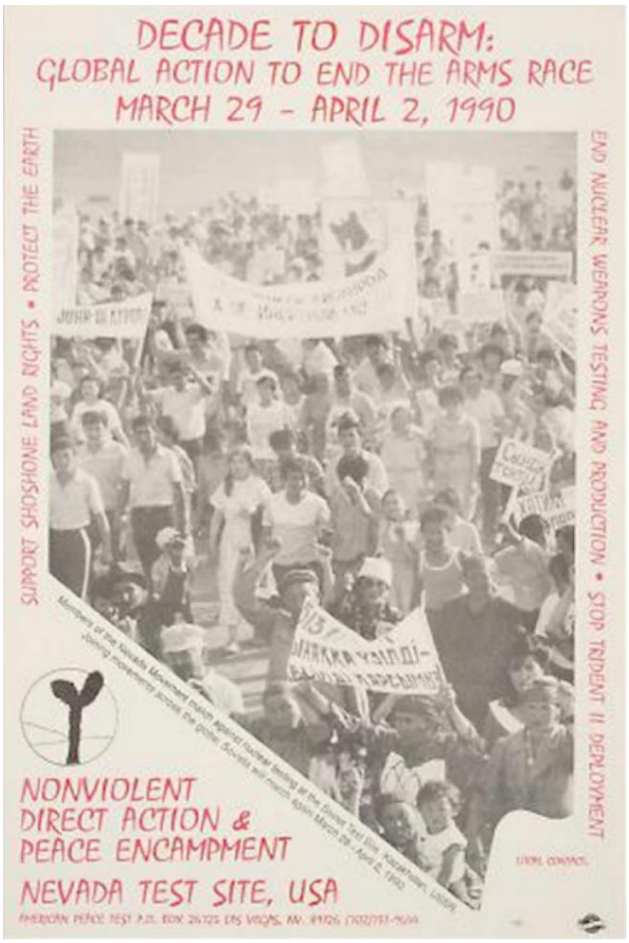
[61] Eric Frohmberg et al., "The Assessment of Radiation Exposures in Native American Communities from Nuclear Weapons Testing in Nevada," *Risk Anal*. 20, no. 1 (March 2000): 101-11. https://doi.org/10.1111/0272-4332.00010.

[62] Jacobs, "Nuclear conquistadors."

These injustices are further exemplified in the Atomic Energy Commission's decision to stop testing when winds were blowing South to Las Vegas and Los Alamos, but no conditions were set for when the wind was blowing east towards Native communities.[63] In fact, Landau reports the Atomic Energy Commission went as far to say that native communities downwind of the test site were a "low-use segment of the population." The Western Shoshone people have resisted the U.S. government's presence on their lands since 1980. Working within the structure of the colonial state, they have used symbols representative of colonial power against the federal government and the military, such as passports and "No Trespassing" signs. By doing so, the Western Shoshone peoples reappropriate the structures of settler colonialism to further their decolonial aims.[64] In 1987, the Nevada Movement was born. This movement consisted of Western Shoshone leaders issuing permits to protestors so that they could enter their occupied territory. These permits challenged assumptions about borders, and who determines property ownership and rights.

[63] Landau, "Nuclear testing in Newe Segobia."

[64] Taylor N. Johnson, "'The most bombed nation on Earth': Western Shoshone resistance to the Nevada National Security Site," *Atlantic Journal of Communication* 26, no. 4 (2018): 224-239.



"Decade to Disarm: Global Action to End the Arms Race"[65]

In 1863, the U.S. government signed a treaty with the Western Shoshone called the Treaty of Peace and Friendship. Under this treaty, Indigenous peoples of the territory were named legal stewards of the land, which the Shoshone people defend challenges to their sovereignty and stewardship. The above image highlights one of many posters made during the arms race, where Shoshone people condemned the land rights issues regarding the effects of nuclear weapons proudction and testing on *Newe Segobia*. Pauline Esteves, a Western Shoshone elder and National Council member

[65] Nevada Desert Experience Records, 1951-2009, MS-00524, *Special Collections and Archives*, University Libraries, University of Nevada, Las Vegas.

noted that the U.S. government "is using Western Shoshone land fraudulently," making it clear that their people have occupied *Newe Segobia* since time immemorial.[66]

She explains that "Our history and the story of our way of life is rooted within those mountains, within the rivers, the valleys, the springs, the rocks, and the animals and the plants".[67] During this Western Shoshone Council tour, Esteves also made it clear that the "United States government was aware of the health hazards posed to people living downwind from the test site [but] they failed to provide adequate protection for the inhabitants of this area during the operation of the testing program […] the inhabitants of this area merely became guinea pigs in a deadly experiment."[68] The primary goal of the Western Shoshone Council was to educate the public about the consequences of nuclear weapons testing in the hopes that they would unite to combat the issue.

Hawaii

The immense health repercussions of the nuclear tests that occurred on Indigenous lands had consequences. Specifically in the Marshall Islands, there is insufficient cancer care for the dramatically high cancer rates from radiation, driving people to migrate to places in U.S. like Hawaii in search of medical care. Between the years of 2015 to 2018, the Hawaii Advisory Committee to the Commission conducted research on Micronesian migrants in Hawaii that moved there under special treaties, known as Compacts of Free Association. The Compacts state that citizens under the Freely Associated States can live and work in U.S. for indefinite periods of time.

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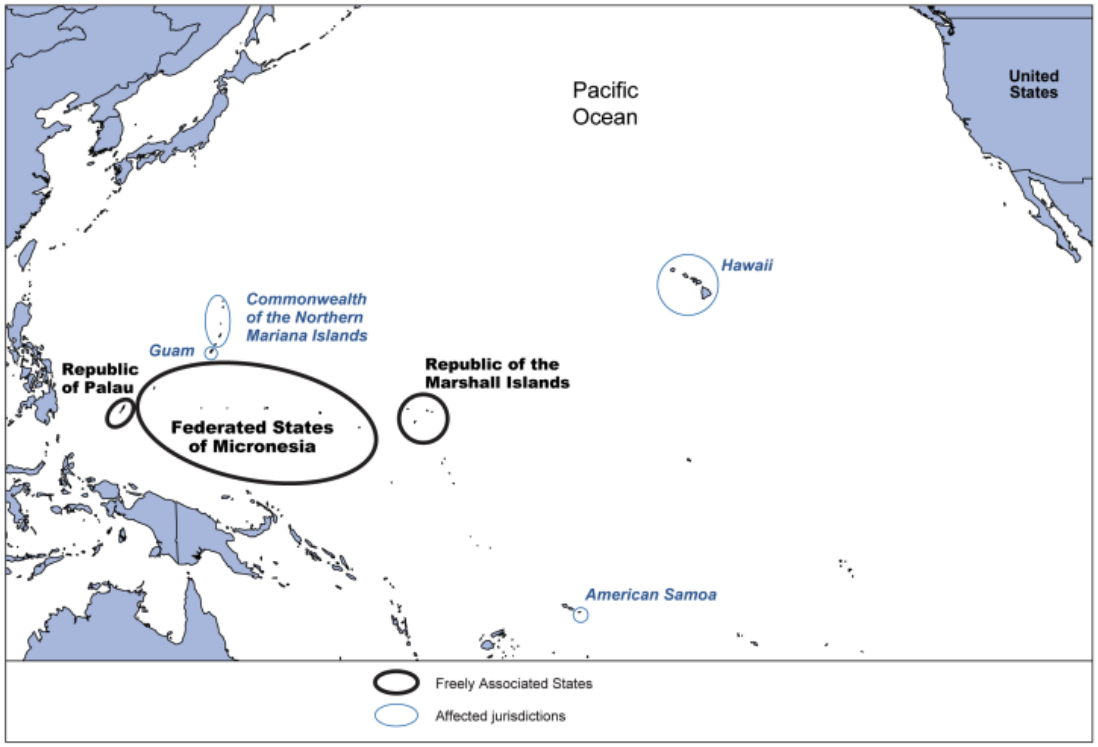
[66] Raymond McCaffrey, "American, Soviet Activists Call for an End to Nuclear Testing," *Gazette Telegraph*, March 15, 1990.

[67] "Comprehensive Test Ban," Nevada Desert Experience Records, 1957-2007, Box 5, Folder 53, Special Collections, University Libraries, University of Nevada, Las Vegas, (NDER-MS-00524).

[68] George Gregory Rozsa, "The Nevada Movement: A Model of Trans-Indigenous Antinuclear Solidarity," *Journal of Transnational American Studies*, August 21, 2020, https://escholarship.org/uc/item/0sn66459.



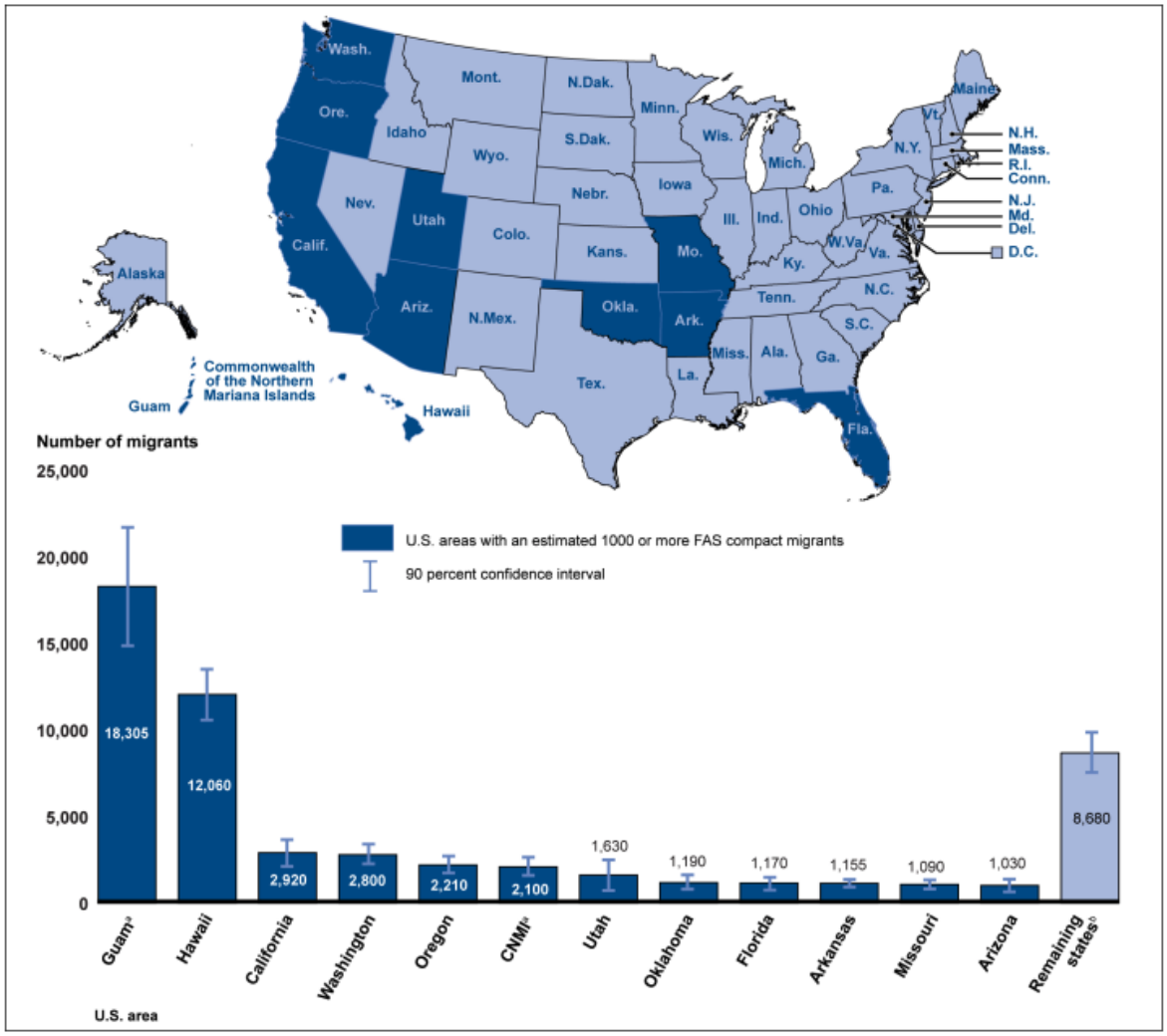
Map of Freely Associated States: Federated States of Micronesia, Republic of the Marshall Islands, and the Republic of Palau[69]

This Micronesian resettlement in Hawaii has caused controversy and debate, namely because of the perception that migrants are overburdening their lands due to the necessity of health, education, and social services resources. A Honolulu resident, Sha Merirei Ongelunge, noted that the relationship with U.S. creates a false narrative that Micronesians are a drain on social benefits. As a Palauan raised in Oregon, she decided to move to Hawaii in hopes of being around other Pacific Islanders and not sticking out like a sore thumb. However, after only one year, she was forced to leave due to racism. Ongelunge did not hesitate to describe:

> People talking about killing cockroaches, calling for a purge on Micronesians, calling to have us – even those of us who are U.S. citizens who are born in the

[69] *United States Government Accountability Office*, "Guidelines Needed to Support Reliable Estimates of Cost Impacts of Growing Migration," Statement for the Record To the Committee on Energy and Natural Resources, U.S. Senate. COMPACTS OF FREE ASSOCIATION, July 11, 2013, https://www.gao.gov/pdf/product/655829.

United States – calling for us to be deported, calling for the parents of minors to be incarcerated, you name it.[70]



Estimated Number of Compact Migrants in U.S. Areas, 2005-2009[71]

The above figure shows that around one-fourth of the citizens of the Freely Associated States live in U.S., with their presence most felt in Guam and Hawaii. The origins of the Compacts of Free Association play a significant role in this story, as the

[70] J. S. Kelleher, "Micronesians feel hatred in Hawaii, decry police shooting," ABC News, May 9, 2021, https://abcnews.go.com/US/wireStory/police-shooting-highlights-anti-micronesian-racism-hawaii-77587599. Accessed February 26, 2022.

[71] *United States Government Accountability Office*, "Guidelines Needed."

United Nations assigned administering authority over the Marshall Islands to U.S.[72] The Trust Territory of the Pacific Islands made the islands a "strategic order to enable the United States to safeguard its own national security," and gave U.S. the exclusive authority to 3 million square miles of the Pacific Ocean. Under this trusteeship system, "the objectives of the United States were to (a) further international peace and security, (b) promote the political, economic, social, and educational advancement of the inhabitants of the trust territories, (c) encourage respect for human rights, and (d) ensure equal treatment in social, economic, and commercial matters."[73] However, this trusteeship forced Marshall Islanders to relocate from their traditional homelands because nuclear tests rendered their lands inhabitable. Agriculture became an impossible feat due to nuclear fallout and military operations, and their economy became fully dependent on the U.S. The idea that this trusteeship would "further international peace and security" was flawed, and ultimately led to the demise of an entire Indigenous community, as the U.S. government failed to fulfill the objectives noted above.

In *Lessons from Hawaii* by Marshallese poet Kathy Jetnil-Kijiner, she offers different lessons through the lens of a Micronesian living in Hawaii:

> shoulda jus nuked their islands when we had the chance! Quote: You know, they're better off living homeless in Hawaii then they are living in their own islands.[74]

Anti-Micronesian sentiments plague the islands of Hawaii, as Micronesians are ridiculed for settling on Hawaiian land and overburdening them with needed resources. Kathy Jetnil-Kijiner lived in Hawaii for nearly fourteen years of her life and was aware of

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[72] U.S. Commission on Civil Rights, "Micronesians in Hawaii: Migrant Group Faces Barriers to Equal Opportunity," A Report of the Hawaii Advisory Committee, March 2019, https://www.usccr.gov/files/pubs/2019/08-13-Hawaii-Micronesian-Report.pdf. Accessed February 2022.

[73] *Hawaii Advisory Committee*, "Micronesians in Hawaii: Migrant Group Faces Barriers to Equal Opportunity," Hawaii Micronesian Report, U.S. Commission on Civil Rights, March 2019, https://www.usccr.gov/files/pubs/2019/08-13-Hawaii-Micronesian-Report.pdf.

[74] Kathy Jetnil-Kijiner, "Lessons From Hawaii," The Fourth Branch, January 19, 2013, YouTube Video, 5:45, https://www.youtube.com/watch?v=3sbtpazYra0.

an underlying racism towards Micronesians. The purpose was not to blame Hawaiians or point fingers, but she wanted to convey the message:

> We [Micronesians] are human beings and we don't deserve to be treated this way […] Regardless of the politics ya know, the government is going around shifting money and pushing us [Micronesians and Hawaiians] against each other. I don't want to see that happening anymore, I want to see us collaborate, I want to see us working together.[75]

Conclusion

There is no way of taking back the tragedies that the U.S. subjected Indigenous communities to, as the nuclear tests will continue to affect those communities for numerous years to come. What is important is acknowledging this portion of history of the U.S. and not sweeping it under the rug, as this will signal the beginning of a new hope, the U.S. transition to decolonization. However, in the process, we must remember that our goal is not to condemn the U.S. government or hold certain individuals accountable. Pointing fingers will not remedy the scars that nuclear colonization has left in countless communities. Rather, we must remember that the future of decolonization is dependent on constructive discussions preceded by acknowledgement.

[75] Jetnil-Kijiner, "Lessons From Hawaii."

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II. Ecological, Environmental, and Health

Hanford's Lasting Effects

João Marques Hassun

Washington state's most significant contribution to nuclear weapons development came through the establishment of the Hanford Site, where weapons-grade plutonium was produced. During the planning and construction of the site, the responsible parties deemed that Hanford was remote enough that nuclear research could be conducted without affecting communities near it. However, as stated by the UW Center for the Study of the Pacific Northwest, Hanford's history is important because the site "is engaged in the largest waste cleanup effort ever undertaken in human history."[76] This section will cover the governmental operations carried out at Hanford, its environmental consequences, and review Hanford's connection to the UW.

Image of a warning sign at Hanford Site in 2014[77]

The International Campaign to Abolish Nuclear Weapons (ICAN) reported that the Hanford site has been home to "nine reactors, five reprocessing plants, hundreds of

[76] M. S. Gerber, "Legend and legacy: Fifty years of defense production at the Hanford Site," U.S. Department of Energy, September 1992, https://doi.org/10.2172/10144167.

[77] Ted S. Warren, "Hanford Nuclear Waste Structures Stabilized, after Risk Identified," *Oregon Public Broadcasting*, April 21, 2021, https://www.opb.org/article/2021/04/20/nuclear-waste-structures-washington-hanford-site-stabilized/.

support and research buildings, and 177 underground waste tanks."[78] After the Cold War, the Department of Energy (DOE) was put in charge of the site's clean-up process. According to ICAN, the Hanford site has more than fifty-six million gallons of radioactive waste stored in subterranean tanks and, as clean-up attempts progressed, it was discovered that "innumerable spills and solid waste burials were not accurately recorded."[79] ICAN defends that "the environmental and health effects have been devastating–and ignored" and points to how a number of activists spoke out about the harmful potential of Hanford's doings but were ignored.

Hanford's contributions to nuclear technology development resulted in the pollution of parts of the Columbia River "by the cooling system that diverted its water and by accidental spills, which were never fully recorded at Hanford, so their scale is hard to know." ICAN documented that the radiation emitted by Hanford's site spread up to over 200 miles into the Pacific Ocean and had large negative effects on fish and soil, which were contaminated. The organization also stated:

> In 2013, Governor Inslee admitted that one tank was leaking up to 300 gallons a year; the contracted cleanup company knew–and did nothing. In order to control the remnant toxic substances, the Department of Energy decided to dispose of them into tanks. Most tanks are about the size of a football field and are single shell, and a small amount are double shell secured, but still a great amount of them have been observed leaking. Among the chemicals that have made their way from the tanks into the ground and, subsequently, into any nearby water sources, is Iodine-129, a substance involved in the process of turning uranium into plutonium, which has been proven to have negative effects on the thyroid. Still, authorities claim that none of the radiation is dangerous to public health.[80]

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[78] "Hanford's Dirty Secret– and It's Not 56 Million Gallons of Nuclear Waste," ICAN, July 29, 2019, https://www.icanw.org/hanford_s_dirty_secret_and_it_s_not_56_million_gallons_of_nuclear_waste.

[79] "Hanford's Dirty Secret."

[80] "Hanford's Dirty Secret."

A DOE study conducted on Hanford revealed that the amount of toxins in the air far exceeded occupational limits. The study also found that there is a causal link between the exposure to these toxins and lung and brain damage, as over a hundred workers have experienced "respiratory and cognitive problems (even dementia), and led to at least one death."[81] As it happens, since the Department of Defense made the decision to halt Hanford's plutonium production, its surrounding area reported "unusually high rates of thyroid disorders, cancer, and handicaps, because of river pollution." Despite the fact that local communities reported an increased occurrence of thyroid diseases since the beginning of Hanford's nuclear operations, the Centers for Disease Control and Prevention (CDC) released a "Hanford Thyroid Disease Study" (HTDS) in which they affirm that "if Hanford radiation releases had any health effects on the thyroid gland, they are probably too small for epidemiology to detect."[82] Scientifically, this affirmation by the CDC's study is incompatible with previous study findings, as research conducted at Chernobyl following the site's nuclear disaster showed that Iodine-131 led to a "statistically significant incidence of thyroid disease and thyroid cancer [..] This 'no harm' conclusion was inconsistent with other studies of radioiodine exposure and thyroid health harm."[83]

Those affected by the nuclear activity conducted at Hanford's dispute the HTDS' conclusion. Trisha Pritikin is one of the most notable activists who is vocal about this issue. As an infant, both she and her family were exposed to toxic substances such as Iodine-129 and Iodine-131, chemicals with a proven connection to higher chances of contracting thyroid problems.[84] Pritikin's entire family, including herself, developed "thyroid disease and cancer" and she is the only member of her family who has

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[81] "Hanford's Dirty Secret."

[82] T. Reynolds, "Final Report of Hanford Thyroid Disease Study Released," *Journal of the National Cancer Institute* 94, no. 14 (July 2002): 1046–48, https://doi.org/10.1093/jnci/94.14.1046.

[83] Trisha Pritikin, "Errors Found in Hanford Thyroid Disease Study," Nuclear Age Peace Foundation, January 11, 2000, https://www.wagingpeace.org/errors-found-in-hanford-thyroid-disease-study/.

[84] Pritikin, "Errors Found."

survived.[85] In reaction to the HTDS findings, Pritikin teamed up with twenty-one citizen group representatives in a letter that challenged the study's findings. With the support of the National Academy of Sciences (NAS), which performed a review of the CDC's HTDS, it was found that "misinformation had been portrayed by the HTDS research team" and that the study's findings were inconclusive, largely due to the fact that research was conducted many years after the exposure began and researchers could only estimate the original level of radiation exposure.[86]

According to Hanford Challenge, an organization that seeks to educate people about the history and situation of Hanford, on May 15, 1989 the DOE agreed to a clean-up plan, known as the Tri-Party Agreement, which aimed to make Hanford compliant to federal environmental laws and the organizations involved estimated that 30 years would be necessary in doing so.[87] Today, that estimate has increased by at least another 75 years, and many scientists believe that it will take thousands of years for Hanford to be completely safe, due to the fact that some of the leaked radioactive contaminants have half-lives "of up to 24,100 years."[88] According to Robert Gray and Dale Becker's 1993 paper "Environmental Cleanup: The Challenge at the Hanford Site, Washington, USA," Hanford's production of plutonium generated over 1.4 billion cubic meters of "hazardous or radioactive liquids and solids." In handling radioactive materials, the DOE determined that the most cost-effective means of disposal would be to bury or store them in tanks. As a result, "soil and groundwater were the major environmental media affected."

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[85] Pritikin, "Errors Found."

[86] Pritikin, "Errors Found."

[87] "What Is Hanford?" Hanford Challenge, https://www.hanfordchallenge.org/whatishanford. Accessed February 24, 2022

[88] Robert H. Gray and C. Dale Becker, "Environmental Cleanup: The Challenge at the Hanford Site, Washington, USA," *Environmental Management* 17, no. 4 (July 1993): 461–75, https://doi.org/10.1007/bf02394662.

Single-shell nuclear waste tanks at Hanford Site[89]

In an interview with ecologist Sara Lovtang, Oregon's representative at the Hanford's Natural Resource Trustee Council and an expert in Nuclear Safety and Emergency Preparedness, she explained that the council has been conducting research for a Natural Resource Damage Assessment slated to be published by 2025.[90] In the interview, Lovtang explained that Hanford's contamination problems are not only caused by nuclear contaminants but a great deal of other substances, such as hexavalent chromium. According to her, Hexavalent chromium was mixed with water and used to cool down the reactors at Hanford, and subsequently returned to the river

[89] Shawn Mohler, "Analysis of Release from Single-Shell Tank at Hanford," Risk Assessment Corporation, December 17, 2014, https://racteam.com/analysis-of-release-from-single-shell-tank-at-hanford/.

[90] Sara Lovtang (Oregon Department of Energy) in discussion with the author, February 21, 2022.

to decrease corrosion on pipes. However, this substance is highly toxic, especially to water life.

Lovtang's interview indicates that operations at the Hanford Site had caused a considerable damage to the environment beyond the improper storage and disposal of chemicals. Dams in Hanford lacked fish ladders and impaired the ability of fish populations, such as salmon and sturgeon, from transitioning up and down the Columbia River. According to "The Hanford Reach Death Trap," an article written by Paul Koberstein for the Cascadia Times, scientists with the Fish and Wildlife Service have found that up to "28 million baby salmon are born every year in the Hanford Reach" but their research estimates that the variation in river levels caused millions of fish to be trapped in small pools of water.[91] 1.3 million fish died in 2003 alone and in other years "the death toll ranged from 31 to 90 percent of the fish, the study says." In addition, the Western Pearlshell Mussel no longer exists in parts of the river near Hanford but still exists in other parts of the river. The Sage Grouse, a bird known to exist along the Columbia River margin before Hanford's operations began, also moved away or perished.

[91] Paul Koberstein, "The Hanford Reach Death Trap," *Cascadia Times*, March 17, 2018, https://www.times.org/remembering-celilo/2018/3/16/the-hanford-reach-death-trap.

Greater Sage Grouse[92]

In 1992, the UW Magazine published an article – “Experts debate how to clean up Hanford’s toxic stew” – in which author Joel Schwarz reported that many of the hazards caused by Hanford’s operations were still unknown because “records of this activity never existed or were destroyed in the name of secrecy and national security.”[93] During her interview, Sara Lovtang echoed Schwarz’s statement that it is hard to prove who is at fault for Hanford’s negative side effects because of a lack of records, but affirmed that water contamination or poor dam operation are the most likely causes. Lovtang also mentioned that Westlake, a lake that existed near Hanford, became a dumping ground for contaminants which negatively affected birds. Since then, the DOE

[92] “Greater Sage-Grouse,” Guide to North American Birds. Audubon, October 20, 2021. https://www.audubon.org/field-guide/bird/greater-sage-grouse.

[93] Joel Schwarz, “Experts Debate How to Clean up Hanford's Toxic Stew,” *University of Washington Magazine*, June 1992, https://magazine.washington.edu/feature/experts-debate-how-to-clean-up-hanfords-toxic-stew/.

decided to cover the lake with dirt to prevent animal contact with contamination, which has had further impact on the presence of certain species in the area.

As a byproduct of its long plutonium-producing history, Hanford currently holds over “56 million gallons of radioactive sludge in decrepit tanks,” which pose a looming threat to any living being that either works or lives in the area.[94] In 2017, two radioactive waste storage tunnels collapsed. While one of those tunnels only “housed contaminated railroad cars” and caused no spills, the other collapsed tunnel held a significant amount of chemicals which leaked, and 7.5 million gallons of chemicals had to be relocated in order to prevent more spills. Hanford’s situation is far from resolved and continuous reports of tanks leaking show the glaring need for a solution. Over the years, the DOE has repeatedly stated that they lack a large enough budget to fully clean the site and, in 2019, the U.S. government “announced plans to cut Hanford’s funding by 416 million dollars even though the crucial cleanup at Hanford needs more funding and not less.” At the same time, the budget for remediation is being reduced and the government seems content with following through on a potentially 80-billion-dollar Waste Treatment Plant plan. This project would require the development of never before used liquid waste technology, as well as around-the-clock, precise operations to ensure the proper agitation of the liquid waste to prevent it from becoming unstable and potentially exploding.

[94] “Hanford's Dirty Secret.”

The Environmental Restoration Disposal Facility in Hanford Site[95]

As demonstrated in the earlier paragraphs of this section, a variety of institutions have undertaken research on Hanford, such as the Hanford's Natural Resource Trustee Council and the DOE. One institution whose connection to Hanford is less public is the UW. Following a request from the Office of Scientific Research and Development, in 1943 the UW's Board of Regents created the Applied Fisheries Laboratory, naming Lauren Donaldson as its first director.[96] A year later, the Manhattan Engineering District of the Army took over and became the federal sponsor for the Applied Fisheries Laboratory, tasking Donaldson with studying "the effect of releasing the coolant water from the Hanford nuclear plant on the fish in the Columbia River." According to Michele

[95] Anna King and Courtney Flatt, "Nuclear Waste Tunnel Collapses at Hanford Site in Washington State," PBS. Public Broadcasting Service, May 9, 2017, https://www.pbs.org/newshour/science/nuclear-waste-tunnel-collapses-hanford-site-washington-state.

[96] "Lauren R. Donaldson," Atomic Heritage Foundation. National Museum of Nuclear Science & History, May 13, 1903, https://www.atomicheritage.org/profile/lauren-r-donaldson. Accessed February 24, 2022.

Gerber, a historian who covered the history of the Hanford site, “the fisheries laboratory hired Dr. Donaldson and disguised the link to Hanford.” In fact, Gerber affirmed that those in charge of the Manhattan Project even considered the “possibility of not giving Donaldson any knowledge of connection between his work and project.”

Health Impacts of Nuclear Decolonization in Marshall Islands

Soyeon Park

One of the most notable U.S. nuclear testing sites is the Marshall Islands. The Marshall Islands was occupied by the U.S. after being controlled by Japan during World War II. After the war, “the U.S. established the Pacific Proving Grounds, essentially the atolls of Bikini and Enewetak and the nearby ocean at the northwestern end of the archipelago, for testing nuclear weapons.”[97] In the immediate postwar years between 1946 and 1958, sixty-six nuclear test detonations were performed on the Marshall Islands. Since then, multiple studies have found that various levels of radiation exposure from radioactive fallout have affected the lives of residents of the inhabited islands. “Significant exposures to radioactive fallout began in 1948, and exposures to residual fallout radioactivity continued after the cessation of testing in 1958, until about 1970.”[98] Unfortunately, the effect of radiation exposure still exists and has affected the health of the Marshallese.

Research led by Charles E. Land, principal investigator in the Radiation Epidemiology Branch in the National Cancer Institute, shows how radiation exposure affected cancer rates of the Marshallese. “[D]uring the lifetimes of members of the MI population potentially exposed to ionizing radiation from weapons test fallout deposited during the testing period (1948–1958) and from residual radioactive sources during the subsequent 12 y (1959–1970), perhaps 1.6% (with 90% uncertainty range 0.4% to 3.4%) of all cancers might be attributable to fallout-related radiation exposures”.[99] Although 1.6% seems low, the data by types of cancer gives a more detailed insight into the severity. It was estimated that 12-95% of thyroid cancer was affected by radiational

[97] Charles E. Land, André Bouville, Iulian Apostoaei, and Steven L Simon, “Projected Lifetime Cancer Risks From Exposure To Regional Radioactive Fallout In The Marshall Islands,” *Health Physics (1958)* 99, no. 2 (2010): 201-15.

[98] Land et al., “Projected Lifetime Cancer Risks.”

[99] Land et al., “Projected Lifetime Cancer Risks.”

exposure, 2-78% for leukemia, and 0.8%-55% for all cancers combined.[100] Statistically, cancer is difficult to prove, but the extremely high estimates at the upper end of these ranges are striking when looking at Marshallese cancer rates.

Co-author Andre Bouville, a Senior Radiation Physicist at the National Cancer Institute, further studied the correlation between Marshall Islands' nuclear site and external irradiation. According to his research, adults of the southern atolls and mid-latitude atolls received relatively low external doses of 5-22 mGy (milligray – unit for absorbed radiational dose) and 22-59mGy, because they were far enough away from the testing site. However, adults from northern atolls, including the most exposed community: Rongelap Island, Ailinginae, and Utrik received over 1,000 mGy even when they evacuated shortly after the testing.[101] This result matches the findings of Land in which the three communities with the biggest cancer rates that potentially were caused by radiation exposure were Rongelap and Ailinginae (around 55% of all cancer cases) and Utrik (around 10%).[102]

Although multiple studies have indicated that the radiation exposure on the Marshallese has affected their health, they often had limited sources since the selected number of Islanders was too small to prove the casualty. For example, Wendy Nembhard, a perinatal epidemiologist at UAMS, has studied the birth defect rate of the Marshall Islands to see if nuclear exposure has increased it. The research only had 2,488 singleton births to study and since the number of births was so small, they were not able to calculate prevalence estimates for some defects.[103] However, the prevalence ratio (PR) of congenital cataracts and truncus arteriosus of Marshallese infants showed a strong connection between nuclear exposure and birth defects. PR is

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[100] Land et al., "Projected Lifetime Cancer Risks."

[101] André Bouville, Harold L Beck, and Steven L Simon, "Doses From External Irradiation To Marshall Islanders From Bikini And Enewetak Nuclear Weapons Tests," *Health Physics (1958)* 99, no. 2 (2010): 143-56

[102] Land et al., "Projected Lifetime Cancer Risks."

[103] Wendy N Nembhard et al., "Nuclear Radiation and Prevalence of Structural Birth Defects among Infants Born to Women from the Marshall Islands," *Birth Defects Research* 111, no. 16 (2019): 1192-204.

the proportion of the people with the disease over the proportion with the exposure.[104] Therefore, having a higher PR means that there is more prevalence of disease in those who were exposed and as the number gets bigger, the association between the disease and the exposure gets stronger. PR is based on 1.0, and congenital cataracts had a PR of 9.3, and truncus arteriosus had a PR of 44.0 which indicates a very strong association.[105] Again, it is likely that radiation exposure on the Marshall Islands has increased the risk of birth defects, but due to the small size of samples, the results were technically inconclusive on determining the direct cause and effect.

Lastly, further research was conducted to study specifically the thyroid cancer rate of the Marshallese by Takahashi, a researcher at Japan Epidemiological Association. His research found an increase in thyroid cancer rates in the islands after radiation exposure. However, a moderate degree of iodine deficiency was also observed which could have affected the increase in thyroid nodules.[106] The increase of thyroid cancer prevalence was also observed on the Marshallese from other atolls besides Rongelap and Utirik, the two with the highest radiation exposure.[107] Although the result was inconclusive, it is still important to point out that the thyroid cancer rate on the Marshallese increased right after the radiation exposure which shows that, even though a direct correlation can't be statistically proven yet, there still is an association. Previously mentioned research conducted by Land also determined that 12-95% of thyroid cancer was caused by radiation exposure[108], supporting Takahashi's theory indicating that there is in fact a positive association between the increase of cancer rate and radiation exposure.

The University of Washington has consistently been involved in Marshall Islands' nuclear site and its effect. In 1946, a radiation research project at the Marshall Islands

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[104] Jeff Martin, "Prevalence Ratio in Cross-Sectional Study," *CTSPedia*, June 2, 2009, https://ctspedia.org/do/view/CTSpedia/PrevalenceRatio.

[105] Nembhard et al., "Nuclear Radiation."

[106] Tatsuya Takahasi et al., "The Relationship of Thyroid Cancer with Radiation Exposure from Nuclear Weapon Testing in the Marshall Islands," *Journal of Epidemiology* 13, no. 2 (2003): 99-107.

[107] Takahashi et al., "The Relationship of Thyroid Cancer."

[108] Land et al., "Projected Lifetime Cancer Risks."

was directed by Lauren R. Donaldson, the Head of the University of Washington's Applied Fisheries Laboratory (now renamed as the Laboratory of Radiation Ecology). His research goal was to trace the radioactive pathway as it travels through living creatures of Bikini Island and to study the effect of Operation Crossroads, the first atomic bomb test at Bikini Atoll.[109] The research was conducted by sampling the specimens at the site, and they were able to examine the deposition of radioactive materials in their systems and determine how long the recovery would take based on the severity of the exposure.

Image documenting the Radiological Survey of Eniwetok, Bikini and Rongelap Atolls between July and September 1964

The expedition discovered that the aquatic life "absorbed the radioactivity and […] concentrated in a living tissue until it becomes dangerous", thus making the

[109] "Coconut crab being monitored by Geiger counter, Bikini Island, August 18, 1964," *Donaldson (Lauren R.) Collection of South Pacific Radiological Surveys, 1946-1964),* University of Washington Libraries, August 18, 1964.

Marshall Islands still dangerous to live in.[110] Neal O. Hines, Donaldson's major correspondent, stated the details of the studies in the Washington Alumnus Volume 40(3) Winter 1950s: first, they found out that although the initial radioactivity has decreased, it is not as weak as some scientists believe. The radioactivity instead was picked up by living organisms such as fish and planktons and was then therefore concentrated in living tissues. Second, the reason why Bikini Island's external radioactivity is low is that the strong gamma ray has diluted itself as fast as expected. However, even after three years since Crossroads, alpha and beta rays still exist. Although they are not as strong as the gamma ray, they can be dangerous when they gain access to living organisms. Lastly, the radioactivity of Bikini Island has been circulating in the life cycle as it has been absorbed by micro-organisms such as plankton and algae, which later got consumed by larger living beings.[111] The University of Washington used its research to provide critical information about the severity of radioactivity at the Marshall Islands. Their work aimed to help the residents and scientists to better understand how long nuclear exposure lasts and the danger of atomic weapon testing.

While the University of Washington's intention and portrayal of themselves were innocent, the UW is also implicated in nuclear colonialism. Since their research method was sampling, they disturbed the natural habitat of local organisms and extracted them from their native habitats. For example, it was mentioned in the Washington Alumnus that the researchers at the Marshall Islands "must sample every form of life and note where it was found, and then they must bring the samples back to Seattle for analysis in University laboratories".[112] Some of the samples they took from the Marshall Islands are displayed in the Burke Museum today as a proud history and scientific achievement of the university. The researchers also extracted Marshall Islands' animals and plants. This is an extractive form of nuclear colonialism as not only the Marshallese's land was

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[110] Neal O. Hines, "Bikini-Pacific Laboratory: The University of Washington Is Unlocking the Secrets of an Historic Atoll," *The Washington Alumnus* 40 (1950): 6–8, https://digitalcollections.lib.washington.edu/digital/collection/donaldson/id/827/rec/43.

[111] Hines, "Bikini-Pacific Laboratory."

[112] Hines, "Bikini-Pacific Laboratory."

used as a testing site of atomic weapons, but even after the testing the islands were pored over to further research. Moreover, the purpose of the visit to the Marshall Islands was not just to conduct scientific research. While going through Lauren R. Donaldson's collection, I came across multiple photos of Catholic mission events that included the University of Washington officials. On August 21, 1949, a dinner party was held by Father Feeney to celebrate his new Catholic mission at Likiep Atoll and the UW researchers were present as well as some Marshallese officials.

From left to right: Freddie Cappelle, Cappelle DeBrum, Bonham, Biddulph, Welander, Lowman, Scudder, Seymour, Donaldson, Father Feeney, Anton DeBrum, Greer, Wilroy, Hines, Palumbo, Kellogg, St. John, and Tinker[113]

The day before that party, a movie night was organized by the Catholic mission where Marshallese children were invited to watch an American movie. The choice of the movie is also questionable as “Burlesque”, an adult movie with nudity, was chosen by

[113] Radiological Survey of Bikini, Eniwetok and Likiep Atolls, “Dinner party held by Father Feeney at his new Catholic Mission, Likiep Atoll, August 21, 1949,” Donaldson (Lauren R) Collection of South Pacific Radiological Surveys, 1946-1964, August 21, 1949, https://digitalcollections.lib.washington.edu/digital/collection/donaldson/id/1099/rec/96.

an army official to be shown to children. While religion might have not been their main purpose of traveling, it is an instance in which western researchers eventually bring in western influences to Indigenous communities. It was not just UW researchers on the Marshall Islands, but western religion and armies were part of the project. Invading the culture of Indigenous people through Catholic missions despite it being unrelated to their research goal is, therefore, a form of nuclear colonialism that atomic weapon testing has brought to the Marshall Islands. Not only were the Marshallese people exposed to deathly levels of radiation which poisoned their lands and bodies, but missionaries and other visitors further attempted to colonize and erode their culture.

1948 “Burlesque” was selected by Lt. Wilroy for the American movie night[114]

[114] Radiological Survey of Bikini, Eniwetok and Likiep Atolls, “Marshallese children gathered in the Catholic Mission on Likiep Atoll for a movie night, August 20, 1949,” Donaldson (Lauren R) Collection of South Pacific Radiological Surveys, 1946-1964, August 20, 1949, https://digitalcollections.lib.washington.edu/digital/collection/donaldson/id/1067/rec/205.

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III. Rights, Resistance, and Future Generations

Examining the Implications of Cultural and Spiritual Harm at Hanford

Zeytun Ahmed

Nuclear colonization is a story of depletion, destruction, and displacement. The Hanford nuclear site has permanently changed the way local Indigenous people interact with the land and provide sustenance for their people. Tribal sovereignty has been eroded along with pollution of the land and water, which has limited tribal governments' ability to defend themselves. The Columbia River, where the Hanford site sits, was bountiful in its resources for millennia. The land was used to hunt, fish, gather goods, medicines, and pasture animals by multiple Native American tribes. The Wanapum lived there year-round and the Confederated Tribes and Bands of the Yakama Nation, Nez Perce Tribe, and the Confederated Tribes of the Umatilla Indian Reservation lived there during the colder seasons. The U.S. government requisitioned over 500,000 acres of land and forcefully displaced some 2,000 people living in towns along the Columbia River. This chapter explores the significance of the cultural and spiritual harm this instance of nuclear colonialism has caused the local people in the area. The socio-political narratives surrounding the Manhattan Project rationalized that the creation and use of nuclear materials was a “necessary evil.” The notion that nuclearism, while unfortunate, is ultimately imperative to the greater good of the nation was also exercised during the relocation and subsequent acquisition of what is now the Hanford Site. By centering narrative accounts detailing how people were impacted, we will attempt to counteract the parti pris mono narrative of nuclearism while honoring the oral histories of Native Nations. In order to think about necessary recommendations, it is crucial to not only take into account the ecological and human health ramifications committed by virtue of the Hanford Site, but putting effort into understanding the cultural and spiritual consequences reveals parameters of harm that numbers simply cannot gauge. This instance of nuclear colonialism is not merely a moment in history that can pass by with time, but indefinite harm that will linger. While the river has now mostly cleansed itself, contaminated soil and groundwater remain an issue. The seemingly endless depth and breadth of the cultural and spiritual harm cannot be contained in this chapter alone. We

must, however, critically examine how the ways in which different communities experience harm speaks to appropriate remedies, and develop an understanding of land as Indigenous epistemology to guide a decolonial framework.

Displacement

In January 1943, 580,000 acres of land along the south bank of the Columbia River became the Pacific Northwest home of plutonium production for the Manhattan Project. The area was selected because it was determined to be isolated enough to be relatively safe and the nearby dams provided considerable hydroelectric power. Through this lens, Hanford was empty and barren but replete with resources, a perfect spot to support the war effort. “The area was an isolated wasteland, and the people were expendable," said Russell Jim, a Yakama Nation elder.[115] As the self-appointed proprietor of the land, the government abruptly informed around 5,300 people living in towns, farms and orchards in Hanford that they needed to vacate the land within thirty days. Their day-to-day lives, communities, and traditional land-use practices were all severely disrupted as a result of this. Walt Grisham, one of the Euro-Americans whose family had long before settled in the area, was informed while serving in the war that his family was instructed to promptly leave their farm.[116] Walt, his family, and his neighbors were significantly impacted by the nuclear construction project in Hanford. Grisham was supporting the war effort in England serving in the Air Force and simultaneously his home was becoming another piece of sacrifice for the sake of war. Grisham reveals that his mother suffered a stroke during the eviction period and his family was wrecked by the forced relocation. “My family had twenty-eight days from the time they got their letter to leave. That meant disposing of livestock and machinery and whatever you felt you didn’t need. That of course meant you disposed of things at a price that probably wasn’t very favorable. I shouldn’t say “probably.” It was not favorable.” Although he was taken

[115] “Native Americans and the Manhattan Project,” Atomic Heritage Foundation, June 28, 2016, https://www.atomicheritage.org/history/native-americans-and-manhattan-project.

[116] “Walt Grisham's Interview,” Atomic Heritage Foundation, 2003, https://www.atomicheritage.org/files/walt-grishams-interview.

aback and distressed, Grisham maintains that he did not feel bitter about what took place at the time. He expressed that he felt “not really bitter, but disappointed. Disappointed that it happened, disappointed how it happened to us.” He accepted that the atomic installation was important enough to be carried out but his main gripe was the manner in which the government did it. Grisham continued, “It had to be done quick. And quick meant sometimes that some people get hurt. We just feel that we got hurt.”[117] The language Grisham uses to articulate his experience, the use of phrases such as “it had to be done quick” and the concession that the nuclear project was carried out because it was important enough, in some ways echoes the dominant narrative of nuclearism. The idea that a nuclear war was justifiable vindicates the deaths of the hundreds of thousands of Japanese civilians incinerated by nuclear weapons and rationalizes the disruption of lives domestically, through sites such as Hanford, that had to occur to make that a reality. Part of the reason why Grisham may understand his family’s eviction from their farm to be an unlucky but indispensable matter may be attributed to their settler status. His story provides a basis for understanding the difference between relocation and displacement. While we often use the words location and place synonymously, place denotes a locality, particularity and history that location does not offer. In this sense, Grisham, while devastated by the situation with his mother and greatly inconvenienced by the loss of his farm, does not seem to convey the deep spiritual hurt that the native people do about being forced out of the land they occupied. The situation with the Hanford Nuclear Site is not entirely new to native people, it is a callback to the settler colonialism their ancestors had long endured. When the 14th President of the U.S., Franklin Pierce, offered the native people financial incentive to purchase two million acres of land in 1854, Chief Seattle responded, “How can you buy or sell the sky, the warmth of the land? The idea is strange to us. If we do not own the freshness of the air and sparkle of the water, how can you buy them?”[118] A differing understanding about the use of land, one utilitarian and one sanctification, is what

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[117] “Walt Grisham's Interview.”

[118] Jerry L. Clark, “Thus Spoke Chief Seattle: The Story of an Undocumented Speech,” National Archives. *National Archives and Records Administration* 18, No. 1 (Spring 1985), https://www.archives.gov/publications/prologue/1985/spring/chief-seattle.html.

separates the Indigenous and colonial perspectives. This is not to discount the grievances of Grisham or the other Euro-Americans who were harmed. Instead, gaining an awareness about how different communities are affected better allows us to understand how to remedy harm. Moving forward, an undoing of the harm inflicted by the U.S. operations in the Hanford Nuclear Site should not begin and end with the Environmental Protection Agency simply conducting what they consider to be an acceptable amount of “clean-up” of the nuclear waste, but amelioration efforts must strive to understand and assume responsibility for the depth of the damage of the afflicted.

For the Yakama people and other neighboring Indigenous nations, the Hanford area was a "Palm Springs," a wintering site they journeyed to each year from the snowy Cascade Mountains. When spring came, families went into nearby elevated zones to camp, hunt, fish, and gather traditional fruits and medication, the knowledge of which was passed down through each generation. Barring access to the land during the nuclear project meant a deprivation of these culturally specific land-use practices. The chief distinction between the Indigenous and American mentality concerning the land is that understanding of place, as previously mentioned. The U.S. government contended that Hanford is an excellent option for the nuclear project thanks to its physical affordances, which is directly in contrast to the Indigenous peoples’ epistemology and pedagogy of the land. Their understanding is that the land and the people are spiritually connected, so any harm to the land metastasizes. Dr. Dian Million, an American Indian Studies Associate Professor and Chair, affirms this spiritual coupling of the land and the self. Million says, “Western people make separation between living and nonliving things. We already understood what western people considered [quantum] entanglement with these places that fed us and provided for us richly.”[119] The sanctity of the place makes the forcible displacement that much more ruinous. This helps explain why the Yakama people refused the compensation they were offered by the government. Russell Jim discloses that “the Yakama Nation refused any compensation eventually, because the

[119] Dian Million (American Indian Studies Associate Professor at the University of Washington) in discussion with the author, 23 February 2022.

words in the treaty meant more to them, to be able to utilize the land as it was intended in the beginning."[120] Financial compensation without a commitment to the people was, perhaps correctly, perceived as an attempt to leave a nuclear legacy with little liability. The Yakama Nation, and other Indigenous communities, have strived to preserve the integrity of the tribal treaties that the U.S. government broke. Moving forward, it is imperative that retainment of critical natural resources and self-determination be central to bills passed to compensate affected tribal communities.

Depletion

The nucleus of the depletion aspect of colonization at the Hanford Nuclear Site revolves around the salmon. The nuclear wastes' effects on the sacred Chinook salmon population have not only had detrimental health impacts to the native people but the war effort distressed ties to their spiritual life and livelihood which center the salmon. Millions and millions of fish would migrate to the Columbia River; it had been this way for thousands and thousands of generations. The Grand Coulee Dam was opened in 1941, just in time to supply electricity to the northwest factories and cool the plutonium producing nuclear reactors at the Hanford Site. This dam halted normal migratory fish runs in the upper Columbia River and severely depleted the ancient and important Kettle Falls salmon fishery located upstream from the site. The Coast Salish people of the Pacific Northwest widely identify themselves as the Salmon People. They sanctify the salmon as the lifeblood of the community and recognize the fish to be a central symbol that connects and enriches all communities it comes in contact with. In 1915, Yakama Chief Weninock described how important salmon are to Indigenous people's survival when he said "My strength is from the fish; my blood is from the fish, from the roots and berries. Fish and game are the essence of my life. I was not brought from a foreign country and did not come here. I was put here by the Creator."[121] Along with being revered as a gift from the Creator, salmon is also a cultural emblem for First

[120] "Native Americans and the Manhattan Project."

[121] "Tribal Salmon Culture," Columbia River Inter-Tribal Fish Commission, November 5, 2021, https://critfc.org/salmon-culture/tribal-salmon-culture/.

Nation peoples and features in many tribal traditions. Salmon spawning is a particularly important custom that is commemorated with a festival known as first salmon. During the first salmon, there are salmon bakes, storytelling, and pow wow dancing to highlight the importance of the fish in Indigenous communities' life.[122] The salmon monarch gave the fish to the Pacific Northwest tribes as a gift, according to their religious beliefs. It is necessary to pay homage to the monarch each season in order for salmon to return year after year. In that regard, the songs and ceremonies honoring the salmon are not only dynamic and central to Indigenous lives, they also "assure the renewal and continuation of human and all other life." Furthermore, the salmon are an indicator species meaning that the health of the fish reveals the health of the water, the berries, the wild game, and the people. The poisoning of the waters, and consequently the salmon population by way of the Grand Coulee and Bonneville dams, and the plumes of radioactive waste that may never be fully removed from the soil suggests that "clean up" is but an idyllic dream.

Destruction

Projects involved in developing weapons of mass destruction also leave destruction in their wake. In Hanford, this destruction was not limited to poisoning of the land, air, and water, but included a devastation of ancestral ties due to nuclear construction projects and the previously mentioned subsequent displacement. The government closed off the Hanford Reservation in 1943. Before that, the land was home to orchardists, farmers and Wanapum Indians, which means River People. After the former were forcibly kicked out of the land, there were some Wanapums who continued to live on the northern end of the nuclear reservation.[123] They still relied on the spawning of the chinook salmon that swim upstream from the site. While the salmon are sanctified, of equal importance to the Wanapums is Hanford Reach, which sits on holy

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[122] "Tribal Salmon Culture."

[123] Timothy Egan. "Ringold Journal; a Stretch of River That Time Forgot." *The New York Times*, May 3, 1989. https://www.nytimes.com/1989/05/03/us/ringold-journal-a-stretch-of-river-that-time-forgot.html.

ground. The River People's "dead are buried in hillsides above the river, and several islands are littered with arrowheads and rock tools used by Wanapums for the last 2,500 years."[124] The Columbia River watershed hosts over sixty dams, several of which were instrumental in supplying hydroelectric power and cooling the nine Hanford reactors. Because of earlier damming projects along the Columbia, including but not limited to the Bonneville and Grand Coulee dams, there are Indian burial grounds on the Columbia that are submerged underwater. "What we've got are a lot of tribal secrets that shouldn't be bothered," revealed Patrick Wyena, a Wanapum who lives on the east bank of the river in a village. "The dead have been disturbed enough," he continues.[125] The Wanapum continue to mourn the pain of the immeasurable destruction to sites of immense personal and spiritual significance where their ancestors were buried. Regarding harm tied to the Hanford Site, Hanford Reach is also linked to the birthplace of the Washane faith in the mid-nineteenth century. The Washane faith, called wáashat or waasaní, is practiced by the Wanapum. Smowhalla, the Sahaptin prophet, spent most of his life near the Hanford Site at Priest Rapids, a sacred site now inundated by the Priest Rapid Dam reservoir.[126] Priest Rapid Dam is a hydroelectric concrete gravity dam located downstream from the Hanford Nuclear Reservation. The Washane way of life, which is sometimes referred to as the "longhouse" religion, is based on the Sahaptin vision quest.[127] It is practiced throughout Sahaptin land, which encompasses the southern portion of the Columbia Basin and the language is spoken by communities including but not limited to the Nez Perce, Walla Walla, Umatilla, Yakama, and Wanapum. Followers of the faith dance to the beat of seven drums, performing ancient rites of thanksgiving for the earth's richness. The Wanapum riverbanks were flooded because of the construction of the Priest Rapids Dam in 1953. These dams greatly desolated lands of ancestral and spiritual significance to the Wanapum. These harms

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[124] Egan, "Ringold Journal."

[125] Egan, "Ringold Journal."

[126] Lynn A. Robbins, "The Participation of Sahaptin-Speaking Native Americans in the Hanford Site Cultural Resource Management Plan," *Environmental History Review* 14, no. 1/2 (1990): 117–28, https://doi.org/10.2307/3984629.

[127] "Seven Drums Religion (Washat)." AAA Native Arts, March 2, 2015, https://native-americans.com/seven-drums-religion-washat/.

may seem tangential and not attributable to the nuclear colonialism of the Hanford Site, but there exists a web of relations and pluralism that we often ignore. In order to diagnose what we conceive the decolonization in question to be, we must continuously and critically evaluate our relationality to land as well our approach to problems. While the Grand Coulee was initially built to solve a problem of mass irrigation, it was created with little regard for the land, the people, or the fish and ultimately it was rushed to support a war effort that further harmed the same subjects as well as people abroad. Despite this, the native people are not and will not be bonded in a perpetual state of victimhood about the happenings at Hanford. Indigenous people are resisting silencing, and healing through various social justice efforts. Dr. Million regards that “the healing comes from recognizing the hierarchical systems that we call colonization. [Be] very specific, tell them who did it, [and] how they did it. The system didn't do it, the people who benefited from the system did it.”[128] Building a decolonial ethic requires a specificity of wrongdoing and wrongdoers to hold all culprits accountable. This is precisely why it is essential understanding the web of relations and positionality between agents of colonialism allows an awareness of how this system maintains itself.

Conclusion

Hanford, and by extension the surrounding land, will never be what it once was. It is incredibly dismal that land, which had peacefully been occupied for time immemorial, is now stamped, for what might be time immemorial, as a toxic nuclear dump. The U.S. government's pursuit of nuclear power in the area was a systematic and state-sanctioned displacement of people, a depletion of cultural and spiritual necessities and a destruction of the land and Indigenous ways of knowing. The government cites an expensive price tag as rationale for hesitancy or lack of effort for cleanup on their part. However, the various effects of this harm are unquantifiable and leave a deep wound that may never be healed, but Indigenous people are working to make the wound scar. The web of relations regarding the Hanford site tells the story of how differently

[128] Million.

communities experienced this harm. The difference in how the Euro-Americans living in Hanford, such as Walt Grisham, and the native people whose ancestors had occupied the land for millennia experienced forced eviction is a prime example of what constitutes the colonial condition. Everybody may initially feel the pain similarly, but one lingers; Grisham experienced an unplanned upset in his life, whereas the Indigenous people displaced from the same land experienced a fundamental uprooting of their entire world. Resisting coloniality requires a specificity about the mechanics of colonialism in order to reckon what decolonization is and what it may look like. The Indigenous pursuit for more robust tribal rights, self-determination, the various methods of healing and cultural regeneration remain central to this expanding widening of decoloniality.

Tribal Rights

Oscar Zahner

The Hanford Nuclear site occupies the land, as recognized by federal treaties, of the Wanapum Tribe, Nez Perce, the Confederated Tribes of the Yakama Nation, and the Confederated Tribes of the Umatilla Indian Reservation.[129] The previous section has addressed the social, cultural, and emotional effects Indigenous people experienced during this forced displacement. The U.S. displaced these tribes with minimal compensation for the territory itself and none for the relocation.[130] The U.S. Department of Energy (DOE) is currently strategizing a long-term plan to transfer responsibility of the land to other government agencies.[131] Tribes such as the Nez Perce have successfully negotiated for power over decisions that may affect tribal resources, but there is still much work to be done to honor tribal rights, claims to the land, and management of relevant ecosystems. This chapter shall analyze the history of treaty rights in the Hanford area, with an emphasis on the current outlook of tribal autonomy with reference to ecosystems and pollution, as well as examples of potential improvements to the area with which to contextualize our demands of the University of Washington.

Hanford is on land ceded by Umatilla and Yakama tribes in the Treaties of the 1855 Walla Walla conference, which also guaranteed rights to the Wanapum Tribe, Nez Perce, the Confederated Tribes of the Yakama Nation, and the Confederated Tribes of the Umatilla Indian Reservation regarding cultural practices on the land. None of these tribes ceded in the treaty their rights to practice traditional spirituality upon the land,

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[129] "Hanford Site," Nuclear Princeton, Princeton University, https://nuclearprinceton.princeton.edu/hanford-site. Accessed February 20, 2022.

[130] Jack Bell, *Nez Perce Tribe's Involvement with Cleanup at the Hanford Site*, Nez Perce Tribe – Environmental Restoration and Waste Management, The National Academies of Sciences, Engineering, and Medicine, October 21, 2021.

[131] R. S. Fausett and P. R. Nickens, *Tribal involvement in Cultural Resource Issues at the Hanford Site*, Transactions of the American Nuclear Society, December 31, 1994, https://www.osti.gov/biblio/89449. Accessed February 16, 2022.

which provides key foods and medicines.[132] The ecological survival of this region, therefore, is deeply tied in with tribal sovereignty and the survival of tribal cultural practices. The treaties guarantee rights to hunting practices which provide the tribes with food, clothing, tools, and cultural expression. As per Article 3 of the 1855 Nez Perce Treaty: "[…] the right of taking fish at all usual and accustomed places in common with citizens of the Territory; and of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."[133]

An important distinction to make, according to the Columbia River Inter-Tribal Fish Commission, is that the 1855 Treaties do not *grant* these rights to tribes on the Hanford Site per se. Rather, they guarantee the protection of rights which the tribes possessed before the land was ceded, as tribes had always exercised their rights to hunt and fish before colonial control of the land.[134] This distinction is important because it contextualizes the work tribes have done to protect their cultural heritage on the land as work to restore rights which have always been a part of their cultural expression, rather than as measures to return to a more permissive form of Western stewardship.

The area provided these cultural resources up until the Hanford site began to poison the land in 1943.[135] Though tribes have regained some authority over ecological management within the area, the status of the land and the rights guaranteed in the treaty have not been restored, as pollution continues to affect protected cultural resources and practices tied to the ecology of the region, particularly hunting and fishing. Because the effects of nuclear contamination are so long-lasting, meaningful

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[132] Kim L. Baptiste, *FINAL REPORT – Hanford Tribal Stewardship*, Nez Perce Tribe Department of Environmental Restoration and Waste Management, March 2005, https://www2.clarku.edu/mtafund/prodlib/nez_perce/Hanford_Tribal_Stewardship.pdf. Retrieved February 16, 2022.

[133] Bell, *Nez Perce*.

[134] *Competing Visions for the Future of Hanford*, Columbia River Keeper, June 2018, https://www.columbiariverkeeper.org/sites/default/files/2018-07/2018.6.1%20Hanford%20Vision%20Report_j_INTERACTIVE.pdf. Retrieved February 25, 2022.

[135] Baptiste, *FINAL REPORT*.

transfer of stewardship may be the only way to commit to rights that were legally guaranteed to the affiliated tribes.

The establishment of trusteeship is outlined in the Nuclear Waste Policy Act of 1982: "[…] upon any decision by the Secretary or the President to develop [the above] […] the State or Indian tribe involved shall be entitled, with respect to the proposed repository involved, to rights of participation and consultation[…]."[136] Tribes which are federally recognized as "affected" are considered trustees for natural resources harmed by pollution from the Hanford site. "Affected" tribes have successfully petitioned for the DOE to be found liable for all past and future natural resource injury assessment costs related to nuclear pollution from the Hanford site.[137] Furthermore, the DOE's American Indian Policy states that "it is the trust responsibility of the United States to protect tribal sovereignty and self-determination, tribal lands, assets, resources, and treaty and other federal recognized and reserved rights."[138]

These policy acts and guidelines constitute, according to an analysis from the Yakima Nation's cleanup program,[139] and supported by reports from the Nez Perce Environmental Restoration and Waste Management Department,[140] a binding commitment of the DOE to restore the Hanford site to its pre-nuclear state. The active responsibility to protect tribal sovereignty required of the DOE by United States law is a positive requirement, which cannot be observed without addressing the ecological concerns which are directly tied to tribal assets, resources, and cultural practice.

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[136] Bell, *Nez Perce*.

[137] *Confederated Tribes and Bands of the Yakama Nation, Plaintiff, v. United States of America, Department of Energy, Department of Defense, Defendants*, 1095. (US. Dist. Ct. E.D. WA 2007), https://scholar.google.com/scholar_case?case=5801429783400183297&q=hanford+nuclear+facility+nez+perce&hl=en&as_sdt=6,48.

[138] Bush, Daniel A. "DOE Indian Policy and Treaty Obligations." Washington Office of Superintendent of Public Instruction. Washington Office of Superintendent of Public Instruction, 2014. https://www.k12.wa.us/sites/default/files/public/indianed/tribalsovereignty/high/cwp-hs/unit3/CWP-HS-Unit3HanfordDOEIndianPolicyTreatyObligationExcerpt-L2.pdf.

[139] Bell, *Nez Perce*.

[140] Baptiste, *FINAL REPORT*.

The Hanford Cultural Resource Management Team, established to protect unique cultural resources, reviews Hanford environmental restoration and construction projects. Cultural heritage items, such as artifacts and human remains, are of primary importance. However, the cultural heritage that tribes aim to protect includes more than these items; tribal cultural practices are based on relation to the land, to ecology, and to the numerous species that graze on the land. These species play central roles in the ceremonies, foods, and economies of affiliated tribes. Cultural preservation is stymied by pollution, which threatens biodiversity and kills or drives out animal and plant species which provide food, clothing, and traditional and ceremonial medicine to area Tribes.

The Hanford Cultural Resource Management Team also handles treaty rights, policy issues, public information, environmental regulation, and health issues. Tribes are currently advocating for long-term stewardship of the region.[141]

The Nez Perce Tribe Environmental Restoration and Waste Management Department (ERWM) oversees clean-up and restoration efforts in the area. It derives its jurisdiction from the 1855 Nez Perce Treaty, which is also the basis for the relationship between the DOE and the Tribe.[142] The Nez Perce Tribe has participated in the current clean-up scheme since 1992.[143] Current clean-up efforts involve cooperation between affected tribes, the DOE, the Washington State Department of Ecology, the EPA, the State of Oregon, and area citizens through the Hanford Advisory Board.

The ERWM has criticized the current stewardship plan as a half-measure.[144] The Hanford Long Term Stewardship plan involves a transfer of government responsibility to the DOE Office of Legacy Management, which the ERWM argues does not have sufficient funding to address Indigenous ecological concerns. In 2021, the Office of

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[141] Daniel A. Bush, "Long Term Stewardship," *The Yakima Nation and the Cleanup of Hanford: Contested Meanings of Environmental Remediation*, 2014, https://www.k12.wa.us/sites/default/files/public/indianed/tribalsovereignty/high/cwp-hs/unit3/CWP-HS-Unit3HanfordLongTermStewardshipExcerpt-L2.pdf. Accessed February 16, 2022.

[142] Baptiste, *FINAL REPORT*.

[143] Bell, *Nez Perce*.

[144] Baptiste, *FINAL REPORT.*

Legacy Management, which manages over one hundred sites, had a budget of 163 million dollars.[145] Policy infrastructure delineating the actual plans for stewardship transfer is sparse, and does not clarify the extent to which tribal authority over the land will be expanded in the future. Of further concern, a transfer between government agencies may muddy the waters of current restoration plans, as these plans and programs may not develop meaningful communication networks between departments as authority is transferred.[146]

The current Long Term Stewardship plan does not delineate a clear "end state" of stewardship at Hanford and does not guarantee sufficient long-term funding for cleanup of the area. Perhaps most importantly, the current arrangement does not recognize that natural resources are cultural resources for the affiliated tribes.[147] Protections of cultural resources must therefore be extended to biological resources. A more thorough incorporation of this principle in a long-term stewardship program would have a sharper focus on the restoration of area ecology. Additionally, because DOE restoration plans do not identify nuclear cleanup as an unending progress, the timeline of the cleanup agreement is unclear. The DOE Land Use Plan uses vague language in this regard; for example, it projects that the federal government will control the inner area of the site for the "foreseeable future."[148] The current arrangement also does not have a guarantee that its stipulations will be honored when the area is transferred to other agencies – a detail which is of great concern to tribes who have already experienced dishonesty and under-handedness from the United States.[149]

Furthermore, the current DOE Land Use Plan is based on analyses of how the area will be used by its occupants for the next fifty to one hundred years.[150] This is a relatively short-term basis for analysis due to the half-life of the radioactive pollutants on

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[145] "The Office of Legacy Management Rolls Out Fiscal Year 2022 budget request," Office of Legacy Management, June 1, 2021, https://www.energy.gov/lm/articles/office-legacy-management-rolls-out-fiscal-year-2022-budget-request. Accessed March 1, 2022.

[146] Baptiste. *FINAL REPORT*.

[147] Bush, "Long Term Stewardship."

[148] Bush, "DOE Indian Policy."

[149] Baptiste. FINAL REPORT.

[150] *Competing Visions*.

the Hanford site, which last tens of thousands of years. The long-term nature of the ecological challenges and the comparatively short-term analysis of DOE Land Use guidelines demonstrate a failure to prioritize Indigenous concerns, which are inherently and therefore permanently tied to the land and to the local ecology, in favor of prioritizing immediate Western economic concerns. For instance, according to the Columbia River Keeper, the current Land Use Plan holds the cleanup program to more relaxed "industrial" standards, which assume that the land will be used for industrial purposes after the DOE's involvement in the cleanup project, rather than the "unrestricted use" standards, which would require the land to be suitable for the hunting, fishing, and other cultural practices protected by the 1855 Treaties.[151]

The protections guaranteed by the treaty imply that DOE should depend on expectations for how tribes will use the land to determine the appropriate standard, but the designation of the land as "industrial" represents the DOE deciding how the land will be used which does not consider tribal rights. Furthermore, the designation of the land as "industrial" is the basis for the DOE's proposal in the 2016 River Corridor Integrated Land Planning Document to leave carcinogenic radioactive pollutants in the soil of certain areas, which may contaminate groundwater. In one area, the concentration of the carcinogenic strontium-90 in groundwater is greater than 1,500 times the safe drinking water standard.[152]

While progress both in bringing in tribal perspectives in management of the area and actual cleanup of pollutants at the Hanford site has certainly been made, the shortcomings must be addressed in the interest of rectifying the long history of colonialism and pollution associated with the area. Envisioning a future for the Hanford site requires an understanding of the complex stewardship dynamics at play, as well as the tribal rights which are at stake. More importantly, a truly decolonized Hanford would protect tribal rights by doing more to include area tribes in decision-making processes, especially concerning the eventual transfer of stewardship of the site. By that principle, an informed discussion of the future of the Hanford site must acknowledge the

[151] *Competing Visions*.
[152] *Competing Visions*.

proposals area tribes have published to repair the current stewardship schema and improve the protections of tribal rights.

In 2006, the Nez Perce Tribe published a series of alternative land use proposals in which the majority of the Hanford site is preserved as unrestricted use land, with the intention of strengthening their practice of the rights guaranteed by the 1855 Treaties.[153] In their proposal, only the land directly administered by the DOE would be designated for industrial use. This proposal, while not adopted, demonstrated that the Nez Perce Tribe did not intend to use the area for industrial purposes, and therefore much of the area designated as such by the United States contradicts the intended use of the land by the area tribes. Future progress towards protecting tribal rights in the area will therefore require the re-evaluation of land currently designated as industrial, which would in turn require more vigorous pollution standards for the soil and intensified cleanup efforts. This step is necessary to sustain the ecology of a region that is central to the tribal rights protected in the 1855 Treaty.

Another 2006 Nez Perce document on the end-state vision for the Hanford site called for vigorous pollutant testing.[154] Subsequent pollutant testing results have informed much of the pushback against the DOE from tribes, including the strontium-90 groundwater statistic referenced earlier. Maintaining pollutant testing in the area is especially important because the United States government has continued to deny, contrary to the evidence, that pollutants in areas designated as industrial will substantially contaminate groundwater.[155] Testing in the areas is therefore vital to protect Indigenous people and area ecology from government oversight.

More broadly, Yakama Nation analysts have taken issue with the structure of the current consultant role of area tribes.[156] According to Yakama Nation elder Russell Jim, the current scheme is such that, “the DOE decides on a course of action, and then

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[153] Baptiste, *FINAL REPORT*.

[154] Rebecca Miles, *Review of the Draft Cercla Five-Year Review Report for the Hanford Site*, June 15, 2006, https://www.hanford.gov/files.cfm/ACF31A.pdf. Accessed March 2, 2022.

[155] *Competing Visions*.

[156] Bush, “DOE Indian Policy.”

submits that to the Tribe for comments, which are then shelved while the DOE pursues the course of action without regard to Native comments or concerns."[157] The consultant role of the tribe does not give tribes a seat at the table when policies are being formulated, nor does it guarantee that their voices will be heard. On one hand, scientific considerations require the study of a pollutant that area tribes never wanted upon their land, and DOE policymakers may feel that scientific considerations take priority in drafting cleanup resolutions. However, the consultant role of the area tribes, in practice, has often relegated tribal sovereignty and human rights as an afterthought. Tribes should act not only as ex post facto consultants but should also be integral in establishing the terms and the goals of land management policy in the area. The designation of industrial land is the case in point: scientific analysis concludes that the land is safe for industrial purposes, but that purpose was established without the consent of the area tribes.

The most significant areas of improvement with regards to tribal rights require a stronger commitment from the DOE to adopt cleanup regulations that align with the rights protections of the 1855 Treaties. This includes an active commitment to protect regional ecology, due to its importance to tribal cultural expression in the form of hunting, fishing, and gathering, as well as the profound connection of Indigenous identity to the land. The current Land Use plan does not adequately protect these rights, as the designation of land for industrial use is contrary to Indigenous intention and harmful to life in the region.[158] This oversight may be attributable to the current stewardship arrangement's failure to prioritize Indigenous participation in land management planning.

These problems are large in scope and involve actors that are not affiliated with the University of Washington. But just as understanding the current challenges to Indigenous rights and stewardship is vital to decolonizing the Hanford site, understanding what decolonization entails is vital to understanding how the University

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[157] Russell Jim, "Russell Jim - Nuclear Attack on the Yakama Culture," *TalkingStick TV*, 2003, http://www.youtube.com/watch?v=wTLCSFN2fH4.

[158] *Competing Visions*.

can be a part of progressing towards that point. As is exhaustively established within this report, the University of Washington is complicit in the poisoning of the land on the Hanford site and all its colonial implications. As such, the University's nuclear sciences department has a responsibility to be a part of aiding the restoration of the Hanford site and the repatriation of the tribes who are inseparably tied to its ecology.

The proposals from Indigenous land management organizations give examples of solutions in which the University of Washington could play a meaningful role. For instance, just as the University provided funding and resources to the nuclear operations at the Hanford site, the University could strengthen the involvement of the nuclear and environmental sciences departments both in pollutant testing, which is vital to holding the government accountable in its cleanup commitments, and the cleanup effort itself, which Indigenous organizations argue require more funding to meaningfully heal the land. Since funding and resources from the University directly contributed to the poisoning of the land at the site, it follows that the University has a responsibility to meaningfully participate in remediation. This process also has the potential to enrich the University's science department by creating nuclear and environmental science projects which, in spite of a nuclear colonial past, are anti-colonial.

Finally, because much of the failures of the current stewardship to meaningfully address tribal rights stem from disagreements over the extent of the protections of the 1855 Treaties, the University of Washington should formalize a recognition not only of its complicity in the colonial history of the Hanford site, but of the Indigenous rights of the present.[159] This would include a recognition that Indigenous rights require the active protection of ecology, and that protected cultural practice includes hunting, fishing, medicine gathering, and usage of the land for ceremonial purposes.

[159] Bush, "Long Term Stewardship."

Methods of Resistance

Rebecca Bustos-Ortiz

There has never been a colonial project that was not met with resistance from Indigenous peoples, and nuclear colonialism is no exception. Resistance can be shown through music, paintings, or simply reviving a tradition that almost disappeared due to the war and nuclear colonization. Resistance means also bringing visibility to those who have been deeply affected by nuclear testing. Through forms such as art or social movements, the victims of nuclear colonialism have been able to highlight their experience and draw attention away from the dominant science-based narrative and towards their emotional experiences, which are often less officially documented. Their experiences are equally, if not more, important to understand how nuclear weapons have brought mass destruction and damage to people's land, culture, and families.

Untold Stories

When speaking about nuclear weapons, the narrative of scientific accomplishments dominates the conversation about historic events that have caused hundreds of deaths and destroyed land. Spaces that are made into sights, such as Hanford's B Reactor, highlight the wartime scientific accomplishments of the location, with images placed throughout the site to be admired while touring and learning about the machinery that contributed to the Manhattan Project.

When Mitsugi Moriguchi, a survivor of the atomic bombing in Nagasaki, visited Hanford, he mentioned how "there was nothing – nothing about the suffering, the damages that were caused. I felt that eyes were closed to this part of it."[160] Moriguchi was one of the first Nagasaki atomic bomb survivors to tour Hanford's B Reactor. His

[160] Hal Berton, "Nagasaki Survivor Visits Hanford, Finds Some of the Story Still Untold," *The Seattle Times*, March 12, 2018, https://www.seattletimes.com/seattle-news/northwest/nagasaki-survivor-visits-hanford-finds-some-of-the-story-still-untold/.

city funded the trip where he stayed for the week, visiting the site that contributed to his family's death, and other spaces where he can share his story.

Mitsugi Moriguchi sits in the control room for one of Hanford's nuclear reactors[161]

Along with the visit to Hanford's B Reactor, Mitsugi Moriguchi visited the Richland high school nearby, where the atomic bombings have become part of their community pride. His reaction included shock and feelings of offense seeing a mushroom cloud used as an emblem for the school. "We were underneath that cloud, to see it being stepped on was excruciating. It was as if the mothers and children who died underneath that cloud were being stepped on," Moriguchi said.[162] The community around Hanford has created a mentality where the destructive history of Hanford is something to be prideful of without realizing the harm it brings to the survivors of the bombings and tests that Hanford contributed to. This report has already addressed the lack of education and

[161] Alan Berner, "Mitsugi Moriguchi checks out control-room panels for Hanford's B Reactor, which produced the plutonium for the atomic bomb dropped on his city at the end of World War II," *The Seattle Times*, March 11, 2018.

[162] Berton, "Nagasaki Survivor."

public knowledge surrounding the obscured side effects of the U.S. nuclear program, and Richland is a prime example of that. The community does not understand Hanford and the nuclear history there as the destructive force it has been; they are able to conceptualize is as a symbol of pride and strength. The suffering caused by Hanford and nuclear activity more generally is completely invisibilized, and only the narrative of nuclear as power remains. Moriguchi's presence in the school and area was not only a moment to understand the victim's point of view, but also a way of resisting nuclear colonization. His direct insight in these spaces is important to understanding and changing the narrative that exists for the surrounding community to focus on the victims' position in the history.

Washington Against Nuclear Weapons

WANW Coalition's first meeting with representatives from seventeen organizations, October 2016[163]

In 2016, the Washington Against Nuclear Weapons (WANW) was formed. It currently consists of fifty-one organizations that has grown to the point of including members of almost every Congressional District in Washington State.[164] The organizations involved vary from higher education organizations to peace action advocates. The coalition has held numerous meetings with every Washington State member of Congress and has generated contacts who reject nuclear weapons. With their efforts and lots of encouragement, the coalition influenced Congress members to take a more public stance on the use of nuclear weapons and programs. Besides influencing members of Congress, WANW helped pass numerous resolutions throughout Washington State. Some of these resolutions include “A Resolution in Support of the Elimination of Nuclear Weapons, and Opposing the First Strike Authority of the President of the United States” in the city of Olympia and “No First Use resolution” passed by the 40th Legislative District Democrats.

The coalition has helped educate dozens of people and reach out to thousands more, publishing media pieces and doing many more things to this day including speaker training on nuclear weapons for different communities and educational events. The size and power that the coalition has been slowly growing has been beneficial to changes on the local level and has become an arm of resistance against nuclear weapons and colonization.

Hanford Journey - Russell Jim

The Hanford Journey is a day-long collaboration with the Columbia Riverkeeper and Yakama Nation to honor tribal environmental leader Russell Jim, who passed away

[163] “Our History,” Washington Against Nuclear Weapons Coalition, 2020, https://www.wanwcoalition.org/our-history.

[164] “Our History.”

on April 7, 2018. Jim was well known as someone who took a stance "against the unsafe disposal of nuclear waste at the Hanford nuclear reservation near Richland."[165] He was a key leader in the community who helped block efforts that the Senate was making that would have created a nuclear waste repository at Hanford in January 1980. He led final legislation to recognize tribal sovereignty and was a founder of the Environmental Restoration and Waste Management Program for his tribe. The comments that he made brought attention to the lack of protection to Indian reservations from the nuclear waste that has polluted their lands. The Hanford Journey focuses on honoring Jim, his contribution, and overall acknowledging that the fight continues to happen to clean up Hanford.

Moving Forward

Resistance is not limited to more traditional forms of insurrection or even always a complete step towards decolonization. It can be protests, events, art, or even simply bringing awareness about these events for more people to be aware about the destruction from nuclear colonization. In Washington state, WANW has been a powerhouse in making some changes through Congress. At the University of Washington, there are student (e.g. Institute of Nuclear Materials Management at UW Chapter) and faculty groups (e.g. SEIU- UW Faculty Forward) actively participating to bring awareness to nuclear colonization. As an institution, it is important to actively recognize the involvement the UW had in the past surrounding nuclear colonization. Emphasizing the stories of the people most deeply affected by the participation and actions of nuclear testing sites is a step forwards to understanding the steps of decolonizing nuclear sites.

[165] Lex Talamo, "Hanford Journey Honors Tribal Leader, Acknowledges Ongoing Fight for Environmental Cleanup," *Yakima Herald-Republic*, September 14, 2021, https://www.yakimaherald.com/news/local/hanford-journey-honors-tribal-leader-acknowledges-ongoing-fight-for-environmental-cleanup/article_c010f61e-11b2-5245-8ccf-c76d8295d088.html.

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IV. The UW as a Decolonizing University

Student activism and Anti-nuclear Efforts at the University of Washington

Rhiannon Rasaretnam

This section will explore the history of activist efforts at the University of Washington (UW), in order to recommend potential strategies for pursuing nuclear decolonization. This report opened with a description of how institutions of higher education contribute to colonization through nuclear research, and the University of Washington is not exempt from this system. Within the UW's expansive history of exploitation of marginalized communities, its involvement in the subjugation of local and global populations through nuclear research is often overlooked. From within this inherently colonial institution, students have served as the driving force behind many changes to challenge the oppressive ways that the university operates and profits from these series of exploitations. This has included demanding more accountability from the administration, advocating for underrepresented groups, and creating community. We will start with notable examples of activism at the UW to supplement the previously discussed examples of Indigenous resistance, both diversity and anti-nuclear efforts, identifying obstacles that consistently arise and strategies to overcome those, and proposing how students and faculty alike can become co-conspirators with impacted communities in the endeavor to create decolonized spaces.

A Brief Look at Student Activism at the UW

The University of Washington boasts a rich history of student activism. Although the specific language and goals have adapted over time to reflect the needs of the community, students have consistently worked in ways to create a more equitable, just, and inclusive academic environment. The most prominent movements centered around

diversity and anti-war demands and began in the 1960s and 1970s.[166] In 1968 the Black Student Union was formed, led by a group of Black students pushing for changes in admissions and curricula. Waves from their success ultimately led to increased numbers of non-white students on campus and administrative changes such as establishing the Office of Minority Affairs and Diversity.[167] In 2013, the diversity credit requirement was approved by the Faculty Senate– initiated by the UW Students for Diversity Coalition. This collaborative effort included the Black Student Union, First Nations, Filipino American Student Association and Movimiento Estudiantil Chicano/a de Aztlán.[168] In 2016, there was a walkout in support of the Black Lives Matter movement and calling once more for the university to address inequities in curricula, staffing, and resources organized by the Decolonize UW coalition.[169] These notable successes were due in large part to long term organizing and smaller steps taken by students across the years.

There have been two major waves of anti-nuclear-activism on campus. Most efforts relating to nuclear weapons were not specifically in the context of decolonization but anti-war sentiment. Many UW students organized and participated in protests against the Vietnam and Cold Wars. Frequently featured in their demands would be calls for disarming the United States' nuclear arsenal. The UW Student Peace Union,

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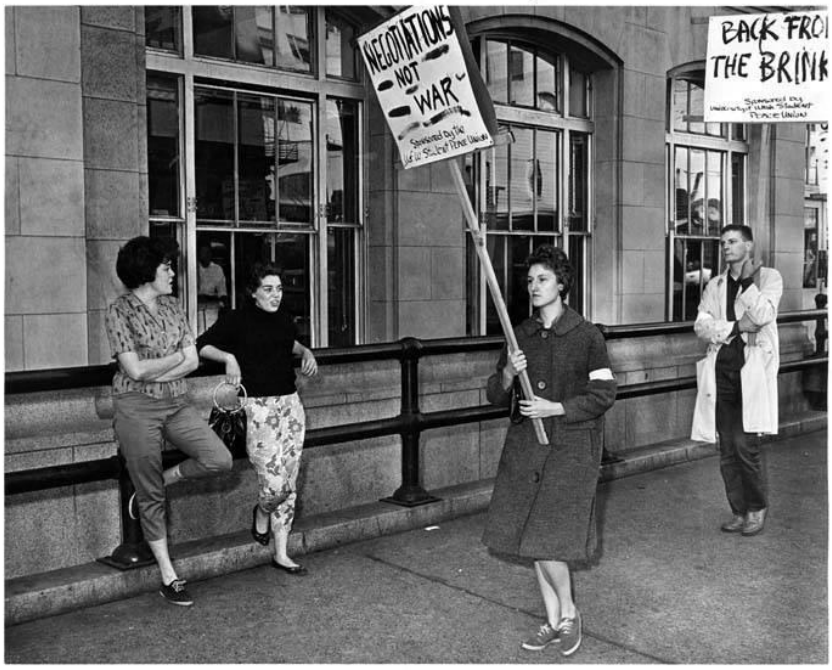
[166] Q.R., K.C., K.K., and S.M. "The 'Capacity Constrained Morality' Zine." Capacity Constrained Morality: A Brief History of Community Resistance & Labor Activism at the University of Washington, September 2019. https://sites.google.com/view/capactity-constrained-morality/home.

[167] "The Black Student Union at the UW." BSU: Home - Seattle Civil Rights and labor history project. Accessed February 17, 2022. https://depts.washington.edu/civilr/BSU_intro.htm#:~:text=The%20Black%20Student%20Union%20was,Seattle%20and%20throughout%20Washington%20state.

[168] Erin Rowley, "Diversity Graduation Requirement for UW Undergraduates Approved," UW News, June 3, 2013, https://www.washington.edu/news/2013/06/03/diversity-graduation-requirement-for-uw-undergraduates-approved/.

[169] Ly, Yemas. "UW Coalition Walks out, Demands Institutional Accountability." The Daily of the University of Washington, May 15, 2016. https://www.dailyuw.com/news/uw-coalition-walks-out-demands-institutional-accountability/article_6d9a27ce-18bb-11e6-b18d-cf5cd7407d8b.html.

active between 1959 and 1964, is shown here picketing the Federal Office Building in downtown Seattle to protest President Kennedy's Cuban blockade.



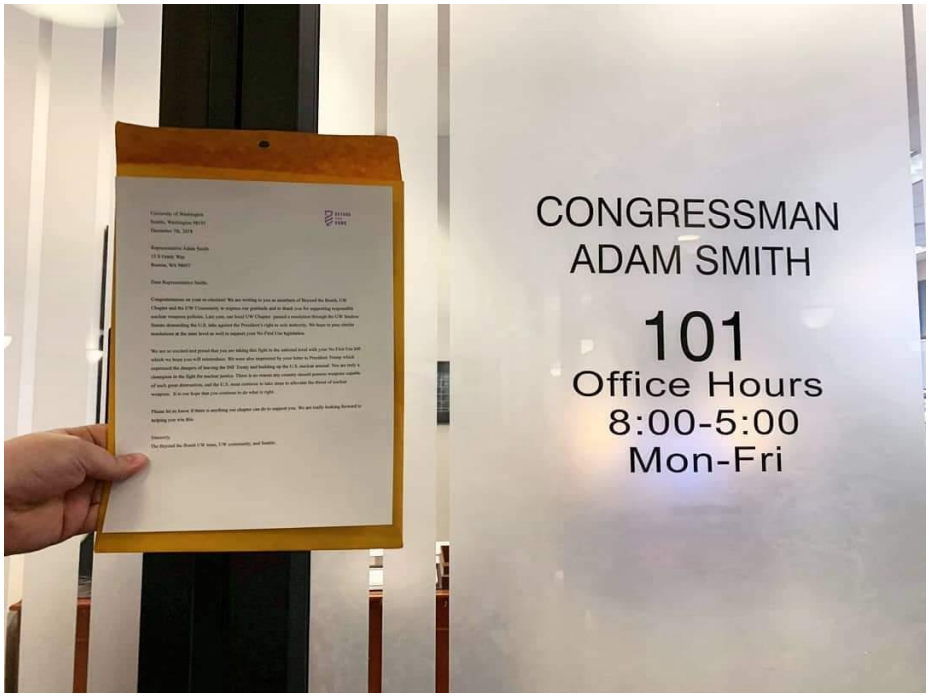
The UW Student Peace Union protesting President Kennedy's Cuban blockade[170]

In 2016, a Registered Student Organization called Beyond the Bomb was formed by students advocating for more responsible nuclear weapons policies. Brought together by a desire to call for the end of nuclear armament, five students formed the student organization to increase awareness and encourage other students to join the nationwide effort. One of the students shared how hearing the story of the Marshallese spurred them into action.[171] Over the course of two years they engaged in a variety of efforts including writing to legislators, collaborating on events, and conducting educational campaigns. In addition, they coordinated with off-campus organizations

[170] John Vallentyne, *Bystanders Heckling UW Student Peace Union picketers, Seattle, October 23, 1962*. Museum of History & Industry Photograph Collection, October 23, 1962, https://digitalcollections.lib.washington.edu/digital/collection/imlsmohai/id/15444/rec/4.

[171] "UW Biology," Diversity and Equity Committee | UW Biology, accessed February 17, 2022, https://www.biology.washington.edu/about-us/diversity/diversity-and-equity-committee.

including Washington Physicians for Social Responsibility and Washington Against Nuclear Weapons.[172] There has also been indication of faculty support. On the Washington Against Nuclear Weapons list of member organizations, the no longer active UW Faculty Forward branch of the Service Employees International Union (SEIU) can be found.[173] This highlights another way that organized support for nuclear decolonization can be shown.



Beyond the Bomb students delivering a message to Congressman Adam Smith[174]

Obstacles

The online nature of the university in the last two years due to the coronavirus pandemic has drastically changed the operations of many student activist groups.

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[172] "Our Projects: Adam Smith Letter of Support." Beyond the Bomb UW, December 6, 2018. https://beyondthebombuw.wordpress.com/ourprojects/.

[173] "Washington Against Nuclear Weapons Coalition," Washington Against Nuclear Weapons Coalition, accessed February 17, 2022, https://www.wanwcoalition.org/.

[174] "Beyond the Bomb," *Facebook*, UW Chapter, December 10, 2018, https://m.facebook.com/BeyondTheBombUW/photos/pcb.1933858253316551/1933858109983232/?type=3&source=49.

Participation declined significantly as students were disconnected from their social spheres and forced to adapt to a new world. As we return to in-person classes and activities, there has been a return to the usual levels of participation, however many student organizers continue to struggle with navigating the hybrid world. However, a greater utilization of technological resources has made communication and resources more accessible.

The next obstacle comes from the structure of the university itself-- student turnover. Students typically spend around four to five years at the University of Washington and their involvement in activism and movements on campus may be even shorter than that. This can lead to knowledge and information being lost from year to year. As students, particularly those in leadership positions graduate, momentum may be lost. Each year, the movement suffers from a loss of presence and also must work to educate and get new incoming students involved. More structural and in-depth changes are only possible over a series of years, so the university can rely on essentially outwaiting students' demands and letting the movement die out.

There are also a lot of spaces in which large decisions are being made without student representation. The school is beginning to improve on this by having more student representation; however, it depends on the individual committees and chairs to determine how much weight a student opinion holds or whether it is simply a circumstance of token representation.

Lastly, and most importantly, funding is a large roadblock for much of the student organizing on campus. This is especially considering that most impacted students already may be having to spend extra time and energy navigating the harmful environment of the university and thus the burden of making change on campus is unequally distributed and falls more heavily on them.

Nuclear decolonization campus strategies

In 2021, the University of Washington formally adopted a land acknowledgement statement, recognizing the lands upon which the university sits. This acknowledgment is

now visible in many spaces including websites, email signatures, and course syllabi. Although this is only a small step that does not directly benefit the Indigenous peoples, it does provide a foundation for education and more actionable steps to be taken. This would be a necessary first step for the university—acknowledging the role that it has played in nuclear colonialism, both direct and indirect.

Currently, there is little to no mention of nuclear colonialism in courses, despite its local relevance and far-reaching impacts. This will be further expanded on in the following section of the report, however, it is important to note that without proper education and awareness of this topic, steps toward decolonization cannot occur. There has been precedent of students managing to adapt course material and to even impact graduation requirements. A previous Task Force group in 2017 went so far as to build a module proposal on this same topic. Because of this, there is already existing potential material, but there needs to be more support from faculty and department heads to actually design and incorporate these into syllabi.

Outside of including nuclear decolonization in relevant courses, there should be resources and information made available to students. These materials could be included alongside statements of acknowledging the university or the specific department's role in furthering colonialism. Students could then have an opportunity to learn more on their own about the history within our state and ways to take action either individually or with broader movements and organizations.

Lastly, repatriations of land and resources as well as general reparations are the most valuable and integral parts of decolonization. Past building awareness and providing resources, decolonization strategies should center around this as a tangible and direct goal. The University of Washington has been able to profit from its nuclear research and only acknowledging its harms in this process is not sufficient.

Next steps

The online nature of the university in the last two years due to the coronavirus pandemic has drastically changed the operations of many student activist groups.

Participation declined significantly as students were disconnected from their social spheres and forced to adapt to a new world. As we return to in-person classes and activities, there has been a return to the usual levels of participation, however many student organizers continue to struggle with navigating the hybrid world. However, a greater utilization of technological resources has made communication and resources more accessible.

As identified earlier, one of the main obstacles to sustained activism on campus is the high turnover rate of students. To overcome this, increased support from faculty and staff could help to retain knowledge and resources as students rotate in and out. Registered student organizations on campus are required to have one advisor, however, the involvement of this advisor is highly dependent on their individual capacity. More structured spaces and positions within the Student Activities Office could be used to be dedicated to supporting student organizations with transitions from year to year. Additionally, within departments, there is ample opportunity for ongoing collaboration between students and faculty to decolonize the curricula. Across campus, there are a few Diversity, Equity, and Inclusion (DEI) committees that exist to identify and create plans for change including the departments of Public Health, Computer Science, and Biology.[175] Within the Jackson School itself, a DEI committee was formed in the fall of 2020. This year, there is a mix of faculty, staff and students from the department, including myself. Using these committees across the school as a groundwork for nuclear decolonization could be useful due to their structure. Because the faculty and staff have longer term appointments, this allows for more knowledge retention across the years and for momentum to continue as student representatives graduate.

[175] "Commitment to Diversity," UW School of Public Health. Accessed February 17, 2022, https://sph.washington.edu/about/diversity/commitment-to-diversity; "Diversity, Equity & Inclusion: Allen School Diversity Committee," Diversity, Equity & Inclusion: Allen School Diversity Committee | Paul G. Allen School of Computer Science & Engineering. https://www.cs.washington.edu/diversity/committee.Accessed February 17, 2022.; "UW Biology," Diversity and Equity Committee | UW Biology, accessed February 17, 2022, https://www.biology.washington.edu/about-us/diversity/diversity-and-equity-committee.

This year, the Jackson School DEI Committee is planning a series of workshops designed to critically analyze syllabi in the department and suggest changes based on student feedback. Our task force is planning to propose including the topic of nuclear decolonization in these workshops. This will offer a direct line of communication between our work, Jackson School students, and faculty. These conversations in the spring can lay the groundwork for ensuring that future discussions around adapting and changing coursework to better include a more diverse history will include the impacts of nuclear research and the ties between the university.

Nuclear decolonization strategies can be adapted across various departments and programs at the university through DEI committees. These groups have the ability to represent programs and have institutional support. Although it would be preferable for student-led initiatives to be successful without working within the confines of university endorsed resources, it is almost impossible to engage in long-term organizing without embedding it within existing institutions.

Conclusion

Nuclear decolonization is an unfamiliar concept to most students, however, language related to decolonization is already present within many activist spaces on campus. Reaching out to groups who are already working on decolonizing different aspects of the university and connecting them with the knowledge and stories around nuclear colonialism ensures that the narratives of the Marshallese and other communities are not lost. DEI committees are an example of existing and potential spaces in order to spread education and awareness. The most important piece comes from institutions adopting these frameworks in order to better support student activism. With this broader context of the relationship between the UW and its students established, the last section takes a step back to analyze the departments and programs forming the environment around students.

Pathways to Decolonizing Education

Tara Saleh

This chapter moves to investigate our school community's role in nuclear decolonization and connections through the primary role of the University of Washington as an institution: education. Framing this work will be the following question: to what extent is education a method of resistance to and perpetuation of nuclear colonization at the University of Washington? This will help our community understand the ways in which the education pathways, research methods and direct actions of the UW as an institution can instead enforce nuclear decolonization. The focus of our interest is on the connections between UW, the Hanford Nuclear Reservation, and the Marshall Islands. This report opened by discussing the overarching role of universities and institutions in utilizing discursive strategies to silence topics of public interest. This chapter will focus specifically on the UW as a possible site of third-university world-making. While the report moved to connect the physical present-day existence, actions, and missions of many UW departments in perpetuating nuclear colonization, this chapter will extrapolate this connection into the intimate settings of classrooms. In parallel to the way Indigenous resistance has been spotlighted, the work of current anti-nuclear and anti-colonial activists, faculty, staff, and students will be highlighted as a means to resist typical structures of damage-centered research.[176]

The wealth of experience through the continual resistance of UW students shows the power of movements within these campuses in instilling changes at an institutional level. This chapter seeks to delve deeper into the ways that curriculum can continue the harm of UW's contributions to nuclear colonization, or alternatively be used as a tool to intercept the pipeline of invisibility and false knowledge production in three manners. (1) Highlight the ways in which UW's historical role in places such as the Marshall Islands and the Hanford Nuclear Reservation has translated to a current student's experience with obtaining an education on campus. (2) Reconcile the ways in which departments

[176] Tuck, Eve. "Suspending Damage: A Letter to Communities." New Palts, New York: State University, 2009.

across the UW campuses educate students regarding discoveries while silencing the historical context in which contributions were derived. (3) Create new, and uplift existing, strategies to reject this obscuration of colonialism's impact in the classroom by intercepting the educational pathways at UW. Therefore, this chapter will pursue the following questions:

> Why is curricular focus essential in pursuing nuclear decolonization at UW?
>
> In what ways does the UW perpetuate erasure of nuclear colonization connections through its current curriculum?
>
> How much does curriculum dictate a student's exposure to class content and overall course selection?

School of Aquatic and Fishery Sciences

As a professor of the School of Aquatic and Fishery Sciences (SAFS), Dr. Luke Tornabene's work focuses on research of the systematics and evolutions of bony fishes.[177] Relying on the UW Fish Collection allows access to a world-class archive of an excess of 13 million specimens marine and freshwater habitats around the world.[178] The Collection now part of the Burke Museum of Natural History and Culture on the University of Washington campus in Seattle, Washington and is shared with the School of Aquatic and Fishery Sciences. In line with UW's persisting mission of innovation and cutting-edge research, this fish collection is the largest in North America by number of specimens, and ranks among the largest in the world in this metric.[179] However, the

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[177] "Research." Tornabene Lab. Accessed February 10, 2022. https://www.fishsystematics.com/what-we-do.

[178] University of Washington Fish Collection. Burke Museum. Accessed February 10, 2022. https://www.burkemuseum.org/static/uwfc_history/Geninfo/index.html#:~:text=The%20University%20of%20Washington%20Fish,in%20Seattle%2C%20Washington%2C%20USA.

[179] "Vision & Values." About the UW. University of Washington. Accessed February 11, 2022. https://www.washington.edu/about/visionvalues/; "Ichthyology at the Burke Museum." Burke Museum. Accessed February 11, 2022. https://www.burkemuseum.org/collections-and-research/biology/ichthyology.

stories behind some of the specimens housed in the collection have complicated histories, including some histories that involve causing harm to communities

As this report has previously established there is a clear link between the acts of nuclear colonization that took place on the Marshall Islands and the Hanford Nuclear Site and the research benefits that were gained thereafter. The UW Applied Fisheries Laboratory was originally funded by the Office of Scientific Research and Development to the Manhattan Engineering District of the Army until 1946, when funding was provided by the Atomic Energy Commision.[180][181] At this point the focus of the laboratory transitioned to assessing Bikini Atoll. Thus, inviting the department's research staff, intrusive tools, and colonialist biases to turn the home of the Marshallese Community into an extractive field of research. In pursuit of understanding the effects of radiation on the aquatic pathways around Bikini Atoll and the Columbia River around the Marshall Islands and Hanford site, respectively, the researchers solidified these places as observable spectacles rather than livable homes. The financial incentive to continue this research as a part of the UW Fisheries Institute continued until 1987. Under a change of name, not mission, the Institute signaled to students, staff and community members surrounding the UW that radiological research was to be pursued despite any harm to non-white communities. The existence of the Marshallese specimens in the UW Fish Collection today serves as a constant reminder of a violent period of history where the value of scientific research often overshadowed the negative impacts it would have on the Marshallese community. The physical existence of the UW Fish Collections stands as a monument to the value of research at the UW as opposed to the livelihood of the Marshallese community. Overall, this prioritization of research favored projects that, while valuable to the field of aquatic and fishery sciences, are detrimental to the existence of the communities these collected species belong to. In the present day, the specimens from the Marshall Islands are rarely used by researchers, because fish

[180] "History of the Applied Fisheries Laboratory." Donaldson (Lauren R.) Collection of Northern Pacific Ocean Radiological Surveys, 1946-1964. Accessed February 11, 2022.

[181] Sneddon, James O. *Aerial View of Northern Islands in Enewetak Atoll, August 13, 1964*. Photograph. Enewetak Atoll, August 13, 1964. University of Washington Libraries.

researchers do not expect UW collections to house such specimens, coupled with the low demand for radiological research in this field.

However, work from Dr. Tornabene constitutes efforts to create space for Marshallese Island communities to reclaim and access—in many cases for the first time—fish collections that have for time immemorial belonged to their land and people. In an interview, Tornabene emphasized the importance of learning the institutional history of the collections in order to situate the role of present-day staff and students in relation to the department.[182] Of importance is the lack of reckoning, in which current faculty or students are not exposed to such historical narratives and therefore continue to perpetuate the invisibility of colonization within the department.

Additionally, Tornabene noted the need to pursue intentional acknowledgement that has a plan beyond resurfacing trauma. In an effort to supplement acknowledgement with action, several efforts are in the process within the Collection to honor Marshallese community's ownership of stolen specimens. Possible avenues include using the samples to explore, "climate change, sea level, overfishing and other issues that threaten their livelihoods." Alongside these efforts, as the Chair of the Curriculum Committee, Tornabene is currently working with graduate students and faculty to teach a permanent course that intersects SAFS content with environmental and social justice. Recently SAFS offered a graduate-student-led course on urgent issues in the field that intentionally was run without faculty present and instead consisted of a combination of guest speakers and student instructors. This offered students the opportunity to speak freely without pressure from the power dynamic of a professor at the helm. In Spring 2021 the new course FISH 507, entitled "The Dark Side to Hot Topics: The Settler-Colonial and White Supremacist History of Aquatic and Fishery Sciences" explored various themes of exploitative research, including 'parachute science' and knowledge

[182] Saleh, Tara A., and Luke Tornabene. Decolonizing Curriculum Within the School of Aquatic and Fishery Sciences. Personal, February 23, 2022.

deconstruction.[183] This was an essential course that has set the precedent for the ways in which race, labor and colonialism have and will continue to intersect with the SAFS.

In offering constructive ideas for the future, Tornabene noted a need for a course offering that discussed the implications of collections in natural history and the ways in which the process of collection perpetuates elements of oppression and white superiority. Tornabene also noted what he perceived to be a deeply troubling lack of historical awareness in SAFS, and lamented that most of the department was ignorant of the School's role in nuclear colonization. This highlights the necessity of faculty education and cross-department and -discipline collaboration that “breaks down the insecurities and barriers” to introducing new curriculum topics such as the impacts of nuclear energy. In juxtaposition to the SAFS official stance which boasts a “distinguished and colorful history”, Tornabene, in the context of UW’s connection to nuclear colonization, stated, “we’re not talking about somebody else’s department here, we’re not talking about some aspect of history… it is our legacy”.[184]

Department of Anthropology and Burke Museum of Natural History and Culture

Dr. Holly Barker, an established professor of Anthropology, Curator of the Oceanic & Asian Culture collection at the Burke Museum, and Commissioner of the National Nuclear Commission of the Republic of the Marshall Islands (NMC), lends her expertise to Indigenous methodologies of research and museum decolonization. Barker cites the importance of curriculum on local nuclear history as a place to intersect the role of ongoing racism and systemic inequities in the education system of the UW itself, in terms of accessibility and burden. In an effort to regard the UW as a decolonizing space, Barker described the power of universities as such:

> as store houses and creation places for all forms of knowledge. And when we look at nuclear related knowledge it's been extracted, created and maintained

[183] “Dark Side of Hot Topics: The Settler-Colonial and White Supremacist History of Aquatic and Fishery Sciences.” *School of Aquatic and Fishery Sciences*. Accessed February 13, 2022.

[184] “Legacy: The Impetus for a Fisheries School at UW.” School of Aquatic and Fishery Sciences. Accessed February 13, 2022. https://fish.uw.edu/about/legacy/.

> without community involvement and input […] The role of education [then] is to expand our ideas about knowledge and understanding of… whole other realms of knowledge to engage with.[185]

Taking this into action, Barker has taught a myriad of courses that rely on this similar foundational pedagogy in non-quantitative and -STEM focused courses in the context of the nuclear field. Most of her classes steer away from structure, and rather "allows the stories [of community members] to stand on their own". First in ANTH 401, 'Decolonizing Museums', a course dedicated to assessing the role of colonial violence in museums, and the ways in which the Burke is now reconciling this harm through community relationships and outreach.[186] Second is ANTH 417 titled "Surfacing the Stories of Hanford: Local and Global Disparities", an annual offering that places great importance on storytelling which can carry the intergenerational knowledge of arts, culture and experience. The intersectional and expansive elements of storytelling create space for relationality across the classroom. As a non-Marshallese community member, Barker emphasizes the goal of this class to create a dialogue and open discussion that welcomes community building as a form of decolonization.

In coalition with the NMC, Holly Barker and a larger group of students spearheaded a movement to implement policy within the housed collections that protects the rights and voices of the Marshallese Community. The language restricts the use of the Marshall Island collections from the UW Fish Collection for the use of radiological research unless explicit and continual collaboration takes place with members of the Marshallese community. While essential in limiting further extractive research practices surrounding nuclear fallout, it leaves the collection vulnerable for research in non-radiological areas,[187] This will be done in large part due to Kalena deBrum, a member of the Marshallese Community and former scientist at the Marshall

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[185] Saleh, Tara A, and Holly M Barker. Decolonizing Curriculum Within the Department of Anthropology and in Relation to the Burke Museum. Personal, February 17, 2022.

[186] Joseph, Nancy. "The Burke Museum, a Place for Students." UW College of Arts & Sciences. November 2019 Perspectives, November 5, 2019. https://artsci.washington.edu/news/2019-11/burke-museum-place-students.

[187] Tornabene. Decolonizing Curriculum Within the SAFS. Personal Interview.

Islands Marine Resources Authority, whose combination of traditional and subject-specific expertise is immensely celebrated at the Burke. Their work will contribute to a holistic review that will help contextualize and align the collection with the needs and concerns of the Marshallese community.

According to Barker, the efforts of UW Anthropology classes to include and center the voices of the Marshallese community have left them feeling “bolstered” and less alone “knowing that young people care about [this issue] given that every generation must inherit this [history].” Overall, Barker remarks that, “a lot of the community leaders feel really overwhelmed and lonely in the work and [knowing] there's a whole group of empathetic young people bursting at the seams with skills and talents that can [inhabit] this realm” is both encouraging and healing.

Jackson School of International Studies and Department of History

Both the department of International Studies and History rely heavily on lecture-based classes that emphasize the banking model of education.[188] While each department includes featured courses that utilize PPL, it is a minority of classes, which leaves the remainder of a student's experience in the departments to be a two-dimensional, and therefore limited, learning experience.

Dr. Andrea Arai, like Barker is an anthropologist and teaches Japan and East Asian studies in the Jackson School. Her classes utilize ethnography and fieldwork studying creative action, social and cultural movements in Japan. Current class offering, JSIS A 305, titled ‘Changing Generations in Japan and East Asia’, highlights collaboration with documentarian Hitomi Kamanaka, a longtime film activist on nuclear power with recent interest in Hanford.[189] In discussing the Fukushima Triple Nuclear Disaster in class, Arai noted, “none of the things I do [in and out of the classroom] will

[188] Govender, Nathisvaran. "Alienation, Reification and the Banking Model of Education: Paulo Freire's Critical Theory of Education." Acta Academica (Bloemfontein, South Africa) 52, no. 2 (2020): 204-22; Freire, Paulo. *Pedagogy of the Oppressed*. 30th Anniversary ed. New York: Continuum, 2000: 77-83.

[189] Hirano, Katsuya, and Kamanaka Hitomi. “Fukushima, Media, Democracy: The Promise of Documentary Film.” Interview. *The Asia-Pacific Journal* 16, no. 16 (August 15, 2018).

absent it", because it has persistent consequences across communities.[190] In her teaching, Arai focuses on "deeply immersing" students by interconnecting class concepts, since nuclear energy relates to every level of labor exploitation, racial oppression and environmental consequence. With this, Arai has been working on engaging with students with new modalities through Kamanaka's accessible works and by pushing students to think about the contributing factors to and the consequences of energy. In the context of UW's role in Hanford and Marshall Islands the same permanence applies. There is an inescapability to nuclear power that must be reckoned with directly. An intentional classroom can provide an open space to introduce such topics to engage and resist the way the consequences of nuclear energy are perpetuated in the UW community through curricular silences.

Similar to other disciplines, Arai was adamant on the importance of collaborative teaching; highlighting guest lecturers as the aspect students connect with most during the course. Working closely with these individuals draws students in, and introduces a new presence in the classroom. Arai notes this as a vital way to minimize the distance and increase the empathy between students and their coursework, imbuing it with personal connection. In the space of JSIS A 305, the goal is to expose students to present-day resistance and movements across Fukushima through experiential learning opportunities and varied conversations. Arai notes, "I don't want my students to graduate without having been exposed to the best scholarship in the areas I teach… and that means bringing in other people to open [the conversation] up."

Dr. Ross Coen, an instructor in the UW History department, with a focus in the American West and technological histories, is teaching HSTAA 432, 'The History of Washington and the Pacific Northwest' for the first time. In an interview, Coen noted that Hanford is featured in the context of two halves of the course.[191] First Washington is contextualized with an Indigenous historical narrative, and then the class pivots to discuss the modernization and urbanization of the state. As the impact of World War II

[190] Saleh, Tara A, and Andrea Gevurtz Arai. Decolonizing Curriculum Within the Jackson School. Personal, February 28, 2022.

[191] Saleh, Tara A, and Ross Coen. Hanford Related Curriculum in HSTAA 432. Personal, February 22, 2022.

is introduced, Washington is regarded as the “Homefront of the war,” and Hanford is regarded as a unique confluence of contributing factors resulting from such war. Hanford is then situated in connection to the hydroelectric power of the Grand Coulee Dam and the selection of the space as a non-disturbance due to its distance from urban centers. Coen then introduces secondary impacts of Hanford, including present day environmental and social justice concerns. As discussed earlier in this report with relation to the Indigenous perspective, Hanford comprises many concerns. The course does not regard the connection between the UW and Hanford, solely as a result of prioritization to teach the state’s expansive history in a single 10-week-term. Coen did however, highlight a goal to include a specific unit of environmental justice concerns in a post-WWII state. This highlights the role of intersectionality in framing these issues, as highlighted by Dr. Tornabene however, there is a difficulty in seeking expertise in the combined fields to provide a substantive learning experience for students.

School of Public Health

WA State Representative Gerry Pollet, J.D., is a Clinical Instructor for the Health Policy Block in the University of Washington Masters of Public Health in Community-Oriented Public Health Practice. Rep. Pollet shares both legislative experience and skills along with three decades of leadership for the impossible task of “cleanup” of the Hanford Nuclear Reservation in developing and teaching problem-based learning cases for the Health Policy block, with an emphasis on environmental justice and exposure issues. Hanford is where most of the United States’’ Plutonium was created for its nuclear arsenal, and is now the most contaminated area in North America. As founder and director of the region’s oldest and largest citizens’ group working for the cleanup of Hanford, Heart of America Northwest, Pollet wrote and led the two statewide ballot referenda that stopped Hanford from being used as a national radioactive waste dump for nuclear weapons and reactor wastes and leading work to develop state standards for consideration of exposures of Tribal members to contamination.

Collaborating with UW Medicine and occupational health clinics, Pollet has been involved in several investigations of exposures of former nuclear weapons production

and current cleanup workers to beryllium and radionuclides. He brought together several UW experts along with Hanford workers to develop and pass legislation to provide a presumption of occupational causation for certain cancers, pulmonary and beryllium diseases for workers compensation.

While the School of Public Health itself did not participate in a project funded by the Atomic Energy Commission, the school has continued to serve as a surveillance institution of Hanford employees—albeit in order to serve the community. The school conducted (1) the University of Washington Former Hanford Worker Medical Program and (2) the Hanford Building Trades Medical Screening Program survey both in 1999. Both existed due to a Duke University coalition titled, The Center to Protect Workers' Rights, and provided scientific evidence of harm.

Through this work, 'downwinders', a term for individuals, families and communities who lived nearby nuclear production or testing facilities, has come to be synonymous with uncompensated and ignored lifelong trauma. Their presence is apparent in the Pacific Northwest, particularly in areas surrounding the Columbia River that have been continually irradiated by the Hanford Nuclear Site. Considering the health ramifications on those who lived near or worked at Hanford, the situation is a pressing public health concern in and of itself. In Trisha Pritikin's book, 'Hanford Plaintiffs', the voices of 24 individuals downwinders who participated in a trial against the government, captured the torture of growing up as a child in a community being unknowingly irradiated. The individuals cite anguish, physical ailments, numerous deaths, agonizing research trials and above all invisibility.

It is important for a program such as COPHP, dedicated to nurturing future community public health professionals, to feature elements of nuclear decolonization in its study. In an effort to do so, Hanford was established as an annual case study in a key element of curriculum in HSERV 537, 'Health Policy' early in the timeline of COPHP. Throughout ten weeks, students were tasked with identifying the problem and seeking interviews, resources and local support in order to meet community needs in suggesting a solution or producing a deliverable. Pollet furthered the value of Hanford as a case study in that it not only encouraged, but demanded, community collaboration

directly with students in the class. In addition, due to Hanford's unique role at the intersection of many social determinants of health such as racism, colonization, pollution and access to healthcare. Within the curriculum, annual guest panelists would include representatives of the Yakama Nation Hanford Oversight Program and community members.

Rep. Pollet continues to design learning experiences in which the COPHP students can work with and support the three federally recognized Tribes with Treaty rights to use the lands, Columbia River shore and resources contaminated by Hanford. He has also linked the students with developing and delivering course lessons for high schools around Hanford, including in Mattawa, WA, whose 6,000 residents are over 90% Spanish or Central American indigenous language speaking immigrants and migrant workers. Pollet also supervises a Tribal and Environmental Law student program during summer quarters in which students work on Hanford issues on behalf of affected Tribes.

In September of 2019, MPH students lobbied to the WA State Senate Labor and Commerce Committee for the failure of a third-party administrator of the Department of the Energy to compensate and respect legal workers' rights at Hanford. In October of 2020, MPH students hosted two opportunities for high school and college students to attend workshops to learn about Hanford's history. The sessions were free and interactive and partnered with Garfield High School: a collaboration that centered reciprocity and community building. Since then, Pollet highlighted the expansion of the program that now includes partnership with the students of high schools in Pasco and Mattawa, many of whom have been directly affected as downwinders. This echoes Pollet's work as a state representative working to achieve seats for Mattawa County on the Hanford Advisory Board. It is important to note that the success of these programs lies in the power of connections that arise from a program rooted in relationality.

In October 2021, Dr. Amy Hagopian, the former director of COPHP, taught a session at the annual Northwest Teachers for Social Justice Conference which sought to teach communities of educators how to teach Hanford in their own classrooms. This highlights an important aspect of the MPH culture, in which each task is coupled with

direct community action. This stands as a key example, and benefit, of Dr. Holly Barker's vision for service-centered public education.

Interdisciplinary Studies and Geography at UW Bothell

Dr. Shannon Cram, a professor of Interdisciplinary Arts and Sciences and Geography at UW Bothell and long-time advocate of Hanford remediation, works closely with discussions of knowledge production and power. Her work spans technology, science, culture and environment through research and teaching, and also in her role as the UW representative on the Hanford Advisory Board (HAB). In Cram's courses, students are provided space to generate an element of creative expression in multimedia production.

In 2016, through BIS 252, 'Politics of Science', students were tasked with a final project to create exhibit proposals for Hanford's B Reactor, a part of the Manhattan Project National Historical Park. Jackie Peterson, a Seattle-based independent museum curator, was invited as a guest speaker to describe her process and goals while designing the 'Black Life at Hanford exhibit, which was featured at the Northwest African American Museum from 2015-2016.[192] This offered the opportunity for students to seek feedback and to discuss proposals in creating an inclusive and impactful exhibition.[193] Tracy Atkins, Project Manager of the National Park in 2016, virtually visited the classroom to discuss the tenets of narrative in relation to the B reactor. Danny Noonan from Washington Physicians for Social Responsibility also visited the class, helping narrow the design and narrative of the students' exhibit proposals by visiting "Particles on the Wall", a traveling exhibit about Hanford, at the Mobius Gallery. The utilization of guest speakers grounded student work in relationality and direct impact, and offered an array of perspective and experience in the field. The assignment captured the process of exhibit design using the context of Hanford, which invited and required extensive

[192] Kelly, Cindy, and Jackie Peterson. Jackie Peterson's Interview. Other. *Voices of the Manhattan Project*. Atomic Heritage Foundation, September 12, 2018.

[193] Saleh, Tara A, and Shannon Cram. Decolonizing Curriculum at UW Bothell with Shannon Cram. Personal, February 18, 2022.

reflection and conversation to underscore the use of narrative as a form of power. Although the proposals were not used in the B reactor, navigating the uncertainty, importance and nuance that associates the responsibility and privilege and storytelling yielded rich lessons.

Earlier in 2017, Cram's students contributed to the podcast, Down by the River: Stories of Hanford, a production by the Washington Physicians for Social Responsibility dedicated to "unpacking the long and nuanced history of the world's first nuclear reactor".[194][195] The course, BISSTS 307, 'Science, Technology, and Society' created space for student reflection on the power dynamics of storytelling. Students researched, interviewed and compiled stories from individuals ranging from downwinder families and Hanford employees to waste management administrators and lawyers. The episode, titled, "Concerns of Future Generations" highlighted the persisting urgency in young local voices seeking change to a seemingly unending issue of toxicity.

Cram's larger goal is to redefine Hanford in education. As opposed to a singular moment of power in dropping a nuclear bomb, she works to define it as a permanent element in community and extend the timeline to reveal long-term impacts. In addition, she seeks to instill in students the necessity to broaden the scope of Hanford, from a fixable scientific problem to one that requires a refocus on the relationship between humans and land as outlined in native epistemologies. Through her role on the HAB, Cram participates in public meetings with the Department of Energy, the Environmental Protection Agency and the Washington Department of Ecology regarding the 'cleanup' of Hanford. Cram uses her students as a representation for the public, utilizing their knowledge, or lack thereof, as a metric for the invisibility of this topic. Cram works to equalize the power dynamics by decentering the governmental agencies and regarding the public as a source of expertise rather than an information vacuum. In doing so, Cram draws on classroom experience to combat the two dominating hierarchical

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[194] "Concerns of Future Generations." Episode. *Down by the River* 1, no. 5, May 17, 2015.

[195] Wpsr. "Down by the River: Stories of Hanford on Apple Podcasts." Apple Podcasts, July 14, 2016. https://podcasts.apple.com/us/podcast/down-by-the-river-stories-of-hanford/id1058553807.

structures in these public meetings. First, the physical realm, using spatial rearrangement to place the board and community members in closer conversation in roundtable discussions as opposed to panel formats. Second the linguistic realm, where conversations utilize vague concepts and silencing phrases, a recent effort included redefining ‘cleanup’ to avoid its connotation as a marketable singular solution. Representative Gerald Pollet expressed a similar sentiment regarding the public meetings, in stating the oppression of these virtual spaces for community organizers. The meetings have been designed to erase connection between individuals and silence discourse related to remediation of Hanford. Limiting the space for connection minimizes space for urgency and demanding answers, furthermore, without a physical presence it manipulates the issue to seem less pressing. The transition to online modality had been made pre-COVID pandemic, while essential now, it was primarily a strategic move to further limit interactions with the public and accessibility of agency time.

Curricular Change at UW

As the current system stands at the UW, there are many obstacles that face faculty when interested in instating curricular change, however the following professors outline various ways to combat these structures.

Dr. Luke Tornabene remarked the difficulty to justify demand to the administration in order to implement new courses, and a dire need for expertise at the intersection of ecology and social sciences that is underrepresented currently at SAFS. Furthermore, Tornabene noted the inefficacy of curriculum inserts on environmental and social justice, if they fail to integrate cohesively into class content, and instead stand out as disingenuous and disconnected modules. Therefore, in the context of the SAFS, discussion must continue regarding ways to embed the history of the past and actions of the future in curriculum without causing further damage or confusion.

Dr. Holly Barker noted that the willingness of faculty themselves to introduce, develop and pursue a new course curriculum is essential. Without the drive of an individual, the administrative process of course approval may seem overwhelming and burdensome. In addition, Barker echoed the benefit, and occasional necessity, in

establishing demand and interest in a new course. Within the classroom, Barker urges the value of feelings, intergenerational uncertainties and the arts in curriculum to “show how [this work] is human and how we all connect to it”, and most importantly to realize that “it’s about all of us”. In this work everyone is implicated, whether through direct action or historical connection, and it is our responsibility to realize the process to decolonize this field can be one of positive creation rather than critical destruction.

Representative Gerry Pollet, who draws heavily on community partnerships, lamented the impact of COVID-19 in minimizing the opportunity for connection. In reference to the barrier to adopt new courses, Pollet emphasized the necessity to seek and solidify departmental connection to this topic in order to seamlessly integrate it into the curriculum. Pollet noted the commitment to featuring Hanford related case studies tailored to recent news and community needs, and has been consistently able to establish connections to the curriculum requirements of the School of Public Health. In relation to COPHP, Pollet focused on the importance on personal-level connections between organizers and agencies, students and professors, classrooms and communities. There is a place at every junction to introduce connections that will propel action forward. Without it, there is little motivation to encourage one another forward, and the isolating effects on communities such as Mattawa and Pasco will persist.

Dr. Andrea Arai recommends cross-discipline education that draws on the expertise of many to supplement the voice of one. In her own classroom, she prioritizes guest lectures and leads by inviting those she felt should be teaching the class for student presentations. In addition, she notes a sentiment from a colleague in the Anthropology department who states, “the classroom is an ethnographic site”. Carrying this idea forward frames the relationality between professors and students, and invites equalizing conversations between the two. While there must be reciprocity with community members or guest lecturers that support class content, there must also be a level of this within the participants of the classroom itself. In terms of addressing administrative difficulty to introduce new courses, from modalities to content, Arai notes the importance of strategy in securing class enrollment. Students are drawn to interesting topics, deep-dive classes, and practicum formats that allow for hands-on

learning; centering these offerings will secure the numbers necessary for administrative approval on their own. Furthermore, Arai recommends utilizing scholarly work outside the scope of the UW and encouraging small group research projects that encourage student-to-student collaboration while also instilling skills in ethnographic research. This can help shape independent, empowered and enriched students that transcend the classroom.

Dr. Shannon Cram emphasizes her commitment to fostering a classroom community. Each course begins by defining a shared starting point, in order to create an equalizing and safe space for future discussions. Cram works to establish shared understanding and invoke genuine relationships between students that invites discussion of a more positive shared imagination. In select classes, students are first invited to envision and draw a first thought upon hearing “the bomb”. Students typically depict a mushroom cloud and are instantly bonded by the universality of their drawings. From here Cram guides students to unpack connections to Hanford, and by the end of class there is a sprawling whiteboard of ways UW students are implicated in the issues of Hanford, from hometowns and ethnicities to indigenous knowledge and labor rights. In addition, Cram urges the importance of experiential learning, in allowing students to be directly involved with these issues and the people who are currently doing the work. In working to incorporate Hanford in various disciplines, Cram validated the overextension of teaching professionals and suggested approaching new faculty or departments with prepared curriculum inserts or readings.

Utilizing elements of success in the experiences of the aforementioned faculty, this report now works to suggest several key takeaways in order to instate long-term curricular change that prioritizes nuclear decolonization at the UW. Considerations should focus on “designing with people and environment, as opposed to for people and environment”.[196] This guiding principle by Jeffrey Hou, speaks to the need for the UW campuses to remain diligent and stringent in upholding the tenets of the Curriculum

[196] “Design Activism Education Survey.” *2019 LAF Fellowship for Innovation and Leadership*. Jeffrey Hou, May 2020. University of Washington. https://designactivism.be.uw.edu/wp-content/uploads/sites/25/2020/05/DesignActivismSurvey2019.pdf.

Transformation Initiative (CTI) at the UW.[197] The CTI focuses on the need to create and uphold more Diversity Blueprints and Requirements that prioritize community needs including student interest, passions and systems of thinking.

In order to ensure the acknowledgement and acceptance of UW's role in nuclear colonization, education must begin with the educators. As outlined by Dr. Tornabene, this can be done with department specificity but utilizing elements of the administrative system to ensure action. First, preparing and delivering intentional presentations at department seminars to faculty members. Second, to follow-up with a reserved and predetermined block of time at a mandatory staff meeting that requires attendance and participation for discussion and brainstorming of next steps. Lastly to continue discussion in Curriculum Committee Meetings that welcomes open dialogue and creativity as methods of resistance and movement.

In moving forward in this work and using the UW as a space of nuclear decolonization, Dr. Holly Barker places emphasis on reciprocity. As well as the sentiment that "public education is service work", meaning all actions of the UW should be serving a community group in an effort to decolonialize the hierarchical university space. Specifically in the important work that needs to be done with local communities, there must be a benefit to these individuals as well. This will ensure UW, as a public university, honors its "deep ethical responsibilities to make sure that [it's] activities and learning supports communities" first and foremost. While there exist other pathways, such as offering selected individuals an honorific title of Clinical Faculty, that while unpaid can be beneficial in future career endeavors, this is not financial compensation. This is an example where current work exists at UW to expand the commitment to reciprocity, however is not prioritized to realize its full potential.

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[197] "Curriculum Transformation: Fostering Inclusive Classrooms." Trends and Issues in Higher Education. University of Washington, May 1, 2017. https://www.washington.edu/trends/curriculum-transformation-integrating-diversity-and-fostering-an-inclusive-classroom/.

Moving Forward at the UW

Through this work it has become apparent that a simple solution is not possible in decolonizing UW in reference to the nuclear realm. However, the work of the aforementioned professors, students and communities, highlight ways forward. Overall, it is important to consider one final question: what would it look like on campus if education was prioritized above other elements of UW's mission: such as research, innovation and prestige? Through collective university-wide ignorance the UW's historical role in nuclear colonization is perpetuated through research, coursework and experiential learning. Considering the prevalence of intentional silence on this subject there is a pressing opportunity to make change through education, whether through formal curriculum or adapted teaching strategies.

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Conclusions

Embracing the Loom

We began Part I with an analysis and acknowledgement of Western nuclear history and hegemonic discourses since the U.S. government has long neglected and denied the consequences of its violent nuclear colonization. Universities actively served the U.S. government in various colonization efforts and the UW was no exception when it stole specimens and surveilled communities under the guise of radiological and environmental research. As discussed in Part I, the UW's acknowledgement of its ties to nuclear colonization will serve as a basis for its transition towards decolonization. We propose the creation of an official UW website addressing its nuclear history and involving local tribes and the Marshallese community in discussions of future work. This Task Force report is only one method of education, and we acknowledge the need to make our findings more accessible and provide an enduring space for further education. Using a website as a platform prioritizes permanence in a more intentional form of knowledge production and commits to holding a space for valued and engaged discourse into the future.

In Part II, we analyzed the ecological and health consequences of nuclear colonization at Hanford and the Marshall Islands. The authors point out conflicting reports about the correlation between radiation exposure and health detriments. Disagreements between government surveys and NGO – and cummunity – surveys are a significant obstacle for affected individuals and communities seeking appropriate and affordable medical support. Connecting back to Yang's idea of a decolonizing university, this Task Force envisions an opportunity to utilize the UW's accumulated medical and research capabilities into a constructive decolonization effort here. We recommend the creation of a UW task force to study the relationship between health disorders and radiation exposure in detail. As previously discussed, the UW conducted two programs in 1999 for surveying and screening Hanford workers, proving the institution's capability to accomplish such work. This must include providing accessible health care for cancers and other radiation-induced diseases that have been caused in the communities affected by U.S. nuclear development in Washington state.

In Part III, we discussed Indigenous rights and resistance to nuclear colonialism. The scientific analysis discussed in the previous section cannot fully capture the breadth of the harm that nuclear weapons research and warfare has inflicted on Indigenous peoples, their lands, and their ways of life. This chapter gives us a more complete picture of the incalculable losses that the tribes on whose land Hanford is located have suffered, and a clearer idea of how we might mitigate those harms. It also addresses the legal issues surrounding the stewardship of this land, and the efforts of multiple tribes to regain formal power over the territory so that they can begin reestablishing their connections to it. The UW's role in responding to this section must be multipronged. The Nez Perce and Wanapum Tribes and the Yakama Nation are already engaged in the struggle to reclaim and decontaminate their lands and know where support is most needed. We suggest that UW confer directly with these tribes, and mobilize multiple departments towards the repatriation of Hanford land. The UW School of Law already boasts both legal clinics where law students work on real-world cases for social good, as well as the Native American Law Center, which focuses entirely on Indigenous legal issues. The UW can mobilize these institutions and begin a collaboration between the law school, its students, and the tribes to aid their sovereignty and decolonization efforts. Similarly, multiple science departments could be useful in Hanford cleanup. The Department of Energy and the EPA have not allocated the necessary resources to continue testing on the contaminated Hanford land, so we recommend that UW step in to fill this gap. Most importantly, UW must engage in direct conversation with these tribes about their needs and use its existing infrastructure of research to support their goals.

However, Part III also addressed the dramatic destruction of culture and tradition when tribes were displaced from their land to form the Hanford nuclear plant. We hold that healing from this cannot be simply a matter of legal and scientific changes, but must include healing from the pain of Hanford's nuclear colonization. There must be a commemoration of this loss, and a move towards healing this trauma. We recommend that as both a gesture of support and a way to visibilize this history, UW sponsor on campus an art installation to memorialize and honor the victims of nuclear colonization and the resilience of the survivors. To be done by an Indigenous artist, this would add

solace to the pain of the harm done, draw public attention to the history, and give victims and survivors in Washington another place to mourn and commemorate their lost loved ones.

The UW also currently holds at the Burke and in other departments many pieces of Indigenous art that it is working on returning to their rightful owners, as well as a wealth of natural history research that was obtained through often colonial means, such as the fish collections from the Marshall Islands. All of this knowledge is currently in UW's hands rather than accessible to the communities from whom it is drawn. Therefore, we would urge the university to increase efforts to rematriate these artifacts and the knowledge surrounding them back to Indigenous peoples. Currently, the artifacts at the Burke are slowly being processed, but there is not enough staff and man-hours available to effectively do so. Therefore, we suggest that the museum hire a full-time staff member to take charge of this project, in collaboration with Fisheries and other departments which have gleaned knowledge through colonialism, and begin rematriating Indigenous knowledges back to the peoples who lost them in the process of colonization.

In Part IV, we delve into the role of UW as an established educational institution both as a site of empowerment and simultaneous oppression. First, by assessing the histories of student led activism on campus, the report was grounded in existing formats and efforts of resistance. It was therefore established that DEI committees have the ability to identity pathways for UW education, and nuclear colonization should be a major part of their future discussions. Second, we contextualized the role of education as a form of resilience by interviewing faculty and understanding the structure of classrooms across departments and modalities. In all, this section highlights the duality of UW and the responsibility of the institution to value the work of students and faculty in reconstructing nuclear narratives rooted in hierarchical power structures. Also, we draw attention to a new proposal by Holly Barker and Sasha Welland. They are collaborating on a Nuclear Decolonization Institute for the UW. We plan to host a faculty round table, consisting of but not limited to the professors who contributed to this Task Force, to

provide feedback and suggestion for making Barker and Welland's proposal successful and sustainable.

Most importantly, our work strives to end the passive perpetuation of nuclear colonization through curricular silences. This is possible by educating faculty and staff through forms of participatory discussion, actively seeking cross-discipline collaboration, and centering the notions of relationality and reciprocity within the classroom. Therefore, this Task Force urges the administration to require classes fulfilling the Diversity credit to involve at least two guest speakers over the course of the ten-week quarter. Diversity classes should also include a practicum element that will actively center community relationships and set a precedent of long-term investment in this work.

Finally, we hope that by increasing education about nuclear decolonization on campus, students will be better equipped to pursuing activism. In our Task Force, we introduced student-led decolonizing bodies like *Nuclear Princeton*. We propose that UW follow suit and form a Registered Student Organization (RSO) dedicated to nuclear decolonization activities within our school through volunteering and public service in collaboration with local tribes. In addition, the proposed RSO would establish relationships with other student organizations like Nuclear Princeton, moving toward a nationwide coalition for nuclear decolonization.

On March 2, 2022, members of Washington's Marshallese community gathered at the Burke Museum to commemorate Nuclear Remembrance Day in honor of the victims and survivors of nuclear testing in their homelands. They were joined by members of the UW community, Marshallese and not, to stand with them in grief and solidarity. Together, everyone present prayed, sang, talked, cried, and commemorated as best as possible the past, present, and future of the Marshall Islands and their people. Of all the ways to heal the wounds of nuclear colonization that we have proposed, this must be the foundation of all of them. The most powerful tool that we have to mitigate the harm done is our relationships with one another. We are gifted with the ability to understand each other and create relationships for support, healing, and alliance. Together, we can weave together the diverse strands of decolonial work to build a stronger future.