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A Breach of Trust: The Radioactive Colonization of Native North America

WARD CHURCHILL

There are whole disciplines, institutions, rubrics in our culture which serve as categories of denial.

—Susan Griffin,
*A Chorus of Stones*¹

In 1903, the United States Supreme Court opined that, as a racial group, we American Indians, like minor children and those deemed mentally deficient or deranged, should be viewed as legally incompetent to manage our own assets and affairs. Indians, the high Court held, were to be understood as perpetual wards of the federal government that, according to the Court, would act as a permanent trustee. With a deft circularity of reasoning, the justices then proceeded to assert that, since Indians are intrinsically incompetent, we should have no authority to challenge trustees' authority over us.²

Thus did the United States formally and unilaterally assign itself plenary—that is, absolute and imperious—power over all Native lands, lives, and natural resources within the forty-eight contiguous states of North America, as well as Alaska, Hawai'i, and other external possessions such as Guam and "American" Samoa. The only curb placed upon the imagined prerogatives of the United States in this regard was and is an equally self-appointed fiduciary responsibility to act, or at least claim to act, in the best interests of those it has subjugated both physically and juridically.³ Although the basic proposition at issue has undergone almost continuous modification over the years, it remains very much in effect at present.⁴

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The scale and implications of the situation are in some ways staggering. In its 1978 final report, the government's own Indian Claims Commission conceded that, after more than thirty years' intensive investigation, it had been unable to find evidence that the United States had ever acquired anything resembling legitimate title to approximately 35 percent of its claimed territoriality, all of which, therefore, remains Native property in a legal sense.⁵ The approximately 2.5 percent of U.S. territory currently reserved for Indian use and occupancy—most of it still held in federal trust status—is also extraordinarily rich in mineral resources.⁶ As much as two-thirds of the uranium ore that the United States claims as its own is situated within reservation boundaries, as is about a quarter of the readily accessible low sulfur coal, up to 20 percent of the oil and natural gas, and substantial deposits of molybdenum, copper, bauxite, and zeolite.⁷

The Bureau of Indian Affairs (BIA), a component of the U.S. Department of Interior, presently administers trust relations with several hundred indigenous peoples and communities encompassing, by official count, some two million individuals.⁸ Simple arithmetic reveals that when the fifty million-odd acres of reserved land are divided by the federal tally of Indians, we end up as the largest landholding group in North America on a per capita basis. Divide the estimated dollar value of the mineral assets within the land by the number of Indians and Native people end up the wealthiest population aggregate on the continent (again, on a per capita basis).

All of this, unfortunately, only exists on paper. The practical reality is that American Indians, far from being financially well-off, are today the most impoverished sector of the U.S. population.⁹ We possess by far the lowest average annual and lifetime incomes of any group. The poorest locality in the United States for twenty-three of the past twenty-five years has been Shannon County, on the Pine Ridge Sioux Reservation in South Dakota. A recent study found that 88 percent of the available housing was substandard, much of it described as virtually uninhabitable. The annual per capita income in Shannon County was barely more than \$2,000 in 1995, while unemployment hovered in the ninetieth percentile.¹⁰

Bad as conditions are on Pine Ridge, they are only marginally worse than those on the adjoining Rosebud Sioux Reservation and a host of others. In many ways, health data convey the costs and consequences of such deep and chronic poverty far better than their financial counterparts. These begin with the facts that, overall, American Indians suffer far and away the highest rates of malnutrition, death from exposure, and infant mortality (14.5 times the national average on some reservations).¹¹

The Indian health level is the lowest and the disease rate the highest of all major population groups in the United States. The incidence of tuberculosis is over 400 percent the national average. Similar statistics show the incidence of strep infections is 1,000 percent, meningitis is 2,000 percent higher, and dysentery is 10,000 percent higher. Death rates from disease are shocking when Indian and non-Indian populations are compared. Influenza and pneumonia are 300 percent greater killers among Indians. Diseases such as hepatitis are at epi-

demic proportions, with an 800 percent higher chance of death. Diabetes is almost a plague [6.8 times the general population rate].¹²

It should come as no surprise, given the ubiquity of such circumstances, that alcoholism and other addictions take an inordinate toll. Although fewer Indians drink than do non-Indians, the rate of alcohol-related accidental deaths among Native people is ten times that of the general population, while the rate of Fetal Alcohol Syndrome (FAS) among Native newborns is 33 times greater.¹³ The suicide rate among Indians is ten times the national norm, while, among Native youth, it is 10,000 percent higher than among non-Indian counterparts.¹⁴

All told, the current life expectancy of a reservation-based American Indian male is less than fifty years in a society in which the average man lives 71.8 years. Reservation-based Indian women live approximately three years longer than their male counterparts, but general population women enjoy an average life expectancy seven years longer than non-Indian men.¹⁵ Hence, every time an American Indian dies on a reservation—or, conversely, every time a child is born—it can be argued that about one-third of a lifetime is lost. This thirtieth percentile attrition of the Native population has prevailed throughout the twentieth century, a situation clearly smacking of genocide.¹⁶

This last statistic is, of course, a policy-driven phenomenon—not merely an inadvertent or unfortunate turn of events. This is where the BIA's exercise of trust authority over Native assets comes into play. While it has orchestrated the increasingly intensive "development" of reservation lands since 1945—a matter that logically might be expected to alleviate at least the worst of the symptoms sketched above—the bureau's role in setting the rates at which land was and is leased and excavated were and are paid by major corporations. This has precluded any such result.¹⁷

Instances in which the BIA has opted to rent out the more productive areas on reservations to non-Indian ranchers or agribusiness interests for as little as \$1 per acre per year, and for as long as ninety-nine years, are legion and notorious.¹⁸ As to mineral royalties, the bureau has consistently structured contracts "on behalf of" Indians, requiring payment of as little as 10 percent of market rates while releasing participating corporations from normal overhead expenses such as the maintenance of minimum standards for worker/community safety and environmental safeguards. In fact, most such arrangements have not even provided for a semblance of post-operational clean-up of mining and processing sites.¹⁹

Such "savings" accrue to U.S. corporations in the form of superprofits and are indistinguishable from those gleaned through their enterprises in the Third World, a matter that has unquestionably facilitated the emergence of the United States as the world's dominant economic power in the post-World War II age.²⁰ Minerals such as uranium, molybdenum, and zeolite, moreover, are not only commercially valuable, but also strategically crucial, an important factor in understanding America's present global military ascendancy.²¹

All of this has been obtained, as a matter of policy, at the direct expense of Native North America and other underdeveloped regions of the world. As

Eduardo Galeano once explained to mainstream Americans, with respect to the impact of their lifestyle(s) on Latin America: "Your wealth is our poverty."²² The correlation is no less true on American Indian reservations. It holds up, even in such superficially more redeemable connections as the United States' efforts to curtail acid rain and other collateral effects of electrical power generation through reliance upon low-sulfur bituminous rather than high-sulfur anthracite coal.

The largest and most easily extracted deposit of bituminous coal in North America is located at Black Mesa in northern Arizona, an area occupied almost exclusively by Navajos. Beginning in 1974, the federal government undertook a program of compulsory relocation to remove some 13,000 resident Navajos from the intended mining area, dispersing them into primarily urban areas and completely obliterating their sociocultural existence, which, until then, comprised the largest remaining enclave of traditionally oriented Indians in the lower forty-eight states. The land upon which their subsistence economy was based was to be destroyed, a circumstance barring even the possibility of their reconstitution as a viable human group at some future date.²³

The coal, once mined, is slurried to the Four Corners Power Plant and other generating facilities where it is burned to produce electricity. The product is then transported over massive power grids to keep air conditioners humming in the Phoenix Valley and neon lights lit twenty-four-hours-a-day in Las Vegas. Meanwhile, 46 percent of the homes on the Navajo Reservation have no electricity at all—in addition, 54 percent have no indoor plumbing, 82 percent no phone.²⁴ A more fitting illustration of Galeano's equation seems inconceivable.

INTERNAL COLONIALISM

Historically, the term *colonialism* has been employed to describe the type of national relations described above, that is, a situation in which one nation exploits the resources and peoples of another. Since ratification of the United Nations Charter in 1945, however, such structural domination/exploitation of any nation or people by another, even—or especially—when it is disguised as the exercise of a perpetual trust, has been deemed illegal within the canons of international jurisprudence. The principle has been clarified, and has received considerable amplification, in subsequent instruments, most unequivocally in United Nations General Assembly Resolution 1514 (XV), also known as the "Declaration on the Granting of Independence to Colonial Countries and Peoples, 1960."²⁵

1. The subjection of peoples to alien subjugation, domination and exploitation constitutes a denial of fundamental human rights, is contrary to the Charter of the United Nations and is an impediment to the promotion of world peace and co-operation.
2. All peoples have the right to self-determination; by virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.

3. Inadequacy of political, economic, social or educational preparedness should never serve as a pretext for delaying independence.
4. All armed action or repressive measures directed against dependent peoples shall cease in order to enable them to exercise peacefully and freely their right to complete independence, and the integrity of their national territory shall be respected.
5. Immediate steps shall be taken in Trust or Non-Self-Governing Territories or all other territories which have not yet attained independence, to transfer all powers to the peoples of those territories, without any conditions or reservations, in accordance with their freely expressed will and desire, without any distinction as to race, creed or colour, in order to enable them to enjoy complete independence and freedom.
6. Any attempt aimed at the partial or total disruption of the national unity and the territorial integrity of a country is incompatible with the purpose and principles of the Charter of United Nations.
7. All States shall observe faithfully and strictly the provisions in the Charter of the United Nations, the Universal Declaration of Human Rights and the present Declaration on the basis of equality, non-interference in the internal affairs of all States, and respect for the sovereign rights of all peoples and their territorial integrity.²⁶

While this would seem straightforward enough, the declaration's universality was muddled by a follow-up provision—General Assembly Resolution 1541 (XV)—which effectively constrained its applicability to peoples and territories separated from colonizing powers by at least thirty miles of open ocean.²⁷ This “overseas requirement” has seriously undermined assertions of the right to self-determination by American Indians and other indigenous peoples.²⁸

There are decolonization issues in the international system which are not so easily defined, such as the Palestine Question or that of South Africa, while the formation of Pakistan out of greater India and the separation of Bangladesh from Pakistan did not relate to legalisms but to political realities. On the other hand, separation by water is no guarantee of independence, as in the case of Puerto Rico, which is officially the “colony” of the United States under United Nations Trusteeship.²⁹

This last could as easily be said of Hawai'i, or such “protectorates” as Guam, “American” Samoa, or the “U.S.” Virgin Islands.³⁰ In any event, the “Blue Water Thesis,” institutionalized in Resolution 1541, has afforded the United States, Canada, and other United Nations member-states a useful pretext upon which to construct the pretense that their ongoing colonization of indigenous nations and peoples is not really colonialism at all. Rather, they contend that they are merely exercising the prerogative provided in the United Nations' Charter of preserving the integrity of their own respective territories.³¹ At present, the

United States in particular is endeavoring to have Native rights (re)defined in international law in a manner conforming to its own practice of maintaining American Indians in a condition of domestic subjugation.³²

While it is true that internal colonialism, visited upon Native peoples by modern settler-states, differs in many respects from the classic models of external colonialization developed by European empires over the past several centuries, it is colonialism nonetheless.³³ Moreover, it is no less genocidal in its implications and effects than were the forms of overseas colonialism analyzed by Jean-Paul Sartre in his famous 1968 essay on the topic.³⁴ Indeed, given how seamlessly external colonialism has been imposed, how its existence and functioning are reflected in even the most ostensibly liberating political discourses, and how committed to attaining its formal legitimization the great majority of states have lately proven themselves, internal colonialism may well prove to be more so.³⁵

Predictably, there are a number of ways in which the Sartrian equation between colonialism and genocide can be brought to bear on contemporary Native North America. Several of these were suggested in the preceding section. Probably the clearest representation will be found, however, in the sorry history of how the United States has wielded its self-assigned trust authority over Indian lands and lives in pursuit of global nuclear supremacy during the past half-century.

RADIOACTIVE COLONIZATION

The origins of U.S. nuclear policy obviously lie in its quest to develop an atomic bomb during World War II. The Manhattan Project was conducted largely at the Los Alamos National Scientific Laboratory, a huge fortified compound created in 1942 on the Pajarito Plateau, northwest of Santa Fe, New Mexico, on land supposedly reserved for the exclusive use and occupancy of the San Ildefonso Pueblo.³⁶ Uranium, the key material used in the lab's experiments and eventual fabrication of prototype nuclear weapons, was mined and milled exclusively in the Monument Valley area on the nearby Navajo Reservation.³⁷ Hanford, a uranium enrichment/plutonium manufacturing facility, was added in 1944, near the town of Richland, on Yakima land in eastern Washington.³⁸ When the first bomb was detonated on 16 July 1945, it was on the Alamogordo Bombing and Gunnery Range, now the White Sands Test Range, adjoining the Mescalero Apache Reservation.³⁹

While the official rationale for these site selections has always been that their remoteness from major urban centers was and is essential to protecting the secrecy of the research and production to which they were devoted, this in itself does not answer why they were not situated in such sparsely populated areas as western Kansas.⁴⁰ A better explanation would seem to reside in the fact that planners were concerned from the outset that the nuclear program embodied substantial risks to anyone living in proximity to it.⁴¹ Such people as resided in the Central Plains region by the 1940s were mostly members of the settler society; those at San Ildefonso, Mescalero, and Yakima were almost entirely Native. For U.S. policymakers, there appears to have been no real question as to which group was the more readily expendable.

That such an assessment is none too harsh is supported by the most cursory review of federal comportment in the immediate postwar period. Already in charge of a nuclear weapons monopoly, which the nation believed would allow it dictatorial authority around the globe, the U.S. was unsure exactly how much more uranium it needed to acquire.⁴² In such circumstances, it was impossible to entice American corporations to engage in uranium extraction. Beginning in 1947, the government's newly formed Atomic Energy Commission (AEC)—now the Department of Energy (DoE)—solved the problem by arranging for several hundred otherwise destitute Navajos to be underwritten by the Small Business Administration (SBA) in starting up tiny mining operations of their own.⁴³

Although it has since been claimed that the AEC was unaware of the dangers attending this occupation, there is ample reason to believe authorities were in possession of sufficient information to realize that they were consigning every Navajo they coaxed into going underground to a veritable death sentence.

It is important to realize that uranium mining is unlike most other kinds of mining in that during the course of blasting and digging for ore, radioactive radon-222 gas is released. Radon-222 is a natural decay product of uranium with a half-life of about three and one-half days. Radon gas by itself poses no real danger: as a noble gas, it is chemically inert and is simply exhaled. But its radioactive "daughter products," can settle in the lungs and injure the tissues. The primary hazard comes from polonium-218 and 214, alpha-emitting radionuclides that lodge in the lining of the lung. Uranium miners are also bombarded by gamma radiation, but the primary danger, again, stems from the ingestion and inhalation of alpha emitters.... Robert J. Roscoe of the National Institute for Occupational Safety and Health has shown that nonsmoking uranium miners followed from 1950 to 1984 were thirteen times more likely to die from lung cancer than a comparable group of nonsmoking U.S. veterans.⁴⁴

Roscoe's test group included a significant proportion of miners who had worked in relatively large, well-ventilated shafts and even in open-air uranium stripping operations. The initial group of Navajos worked in tiny, unventilated shafts where radon concentrations were often hundreds of times higher than average. As a consequence, all the AEC/SBA miners were dead or dying of lung cancer and/or other respiratory ailments by the mid-1980s. This seemed a preview of what by the 1990s would become national policy and yuppie fad—an attempt to blame cigarette smoking and other personal behaviors for this systemically induced health catastrophe.⁴⁵

As early as 1556, Austrian physician Georgius Agricola had described the extraordinary incidence of death by "consumption of the lungs" among Carpathian silver miners digging ores laced with radium.⁴⁶ In 1879, F. H. Härting and W. Hesse correctly diagnosed what had by then become known as *Bergkrankheit* (mountain sickness) as lung cancer, and demonstrated that approximately three-quarters of all miners in the Schneeberg region of

Saxony died of the disease within twenty years of entering the shafts.⁴⁶ By 1924, German researchers P. Ludewig and S. Lorenser had linked the Schneeberg miners' cancers to radon inhalation,⁴⁸ a connection explored more fully by American physician Wilhelm C. Hueper, founding director of the American Cancer Institute's Environmental Cancer Section, in his seminal 1942 book, *Occupational Tumors and Allied Diseases*.⁴⁹

Hueper's study was not the only one readily available to the AEC. In 1944, Egon Lorenz published an article in the *Journal of the National Cancer Institute* which concluded that "the radioactivity of the ore and the radon content of the air of the mines are generally considered to be the primary cause" of lung cancer among uranium miners.⁵⁰ Occupational cancer expert Fred W. Stewart went further in a 1947 issue of the *Bulletin of the New York Academy of Medicine*, predicting that there would likely be epidemic "cases of cancer and leukemia in our newest group of industrialists, workers in the field of fissionable materials."⁵¹ Even Bernard Wolf and Merrill Eisenbud, directors of the AEC's medical division, were warning their superiors of such dangers.⁵²

The Navajos, of course, were told none of this. On the contrary, when Wolf and Eisenbud tried to establish minimum safety standards for miners in 1948, they were "told by Washington that the health problems of the mines were not the responsibility of the AEC, and...should be left to the jurisdiction of the local authorities."⁵³

The AEC had been assigned by Congress the responsibility for radiation safety in the nuclear program but, according to a bizarre interpretation of the 1946 Atomic Energy Act, the commission was bound only to regulate exposures after the ore had been mined. Responsibility for the health and safety of uranium miners was left up to individual states, a situation that Merrill Eisenbud rightly recognized as "absurd," given their lack of equipment and expertise to deal with the expected health problems [not to mention the fact that the states lacked jurisdiction on Indian reservations in any event].⁵⁴

Be that as it may, the AEC plainly went to great lengths to ensure that the general public remained equally uninformed. This was accomplished through a regulation requiring that all scientific papers dealing with radiation prepared under auspices of the National Institutes of Health (NIH) be cleared by the commission prior to presentation or publication. Thus, when Hueper sought to present a paper at a 1952 meeting of the Colorado State Medical Society, he was instructed by Shields Warren, the AEC's director of biology and medicine, to "delete all references...to the hazards of uranium mining."⁵⁵

Hueper...refused on the grounds that he had not joined the [National Cancer Institute; NCI] to become a "scientific liar"... When word got around that he was not silently accepting his censorship, Warren again wrote the director of the NCI, this time asking for Hueper's dismissal. Hueper stayed on but was soon barred from all epidemiological work on occupational cancer. The order came from the surgeon general. Hueper was henceforth allowed to do only

experimental work on animals, and was prohibited from further investigations into the causation of cancer in man related to environmental exposure to carcinogenic chemical, physical, or parasitic agents.”⁵⁶

Similarly, in 1955 the AEC managed to prevent Nobel Laureate H. J. Muller, a geneticist, from speaking at the International Symposium on the Peaceful Uses of Atomic Energy in Geneva because he had concluded that radiation induced mutagenic effects in human organisms.⁵⁷ During the early 1960s, the commission was also able to marginalize the work of Ernest J. Sternglass, whose groundbreaking research demonstrated that the proliferation of radioactive contaminants would lead to increased rates of miscarriage, stillbirth, childhood leukemia, and other cancers.⁵⁸ A few years later the AEC brought about the dismissal of John W. Gofman, the discoverer of both uranium-233 and plutonium isolation process, from his position at the Lawrence Livermore Laboratories. Gofman’s offense was determining that, contrary to the AEC’s official posture, there was really no safe level of exposure to radioactive substances.⁵⁹

While the commission’s ability to silence such voices diminished over the years, it never really disappeared altogether. When AEC researcher Thomas F. Mancuso set out in 1977 to publish findings that radiation exposure was causing inordinate rates of cancer among workers at the Hanford Military Complex, he was terminated and his research materials impounded.⁶⁰ Much the same fate was bestowed upon Rosalie Bertell, albeit indirectly, through the National Cancer Institute, when she began to publish the results of epidemiological research on the effects of nuclear contamination during the late 1970s.⁶¹ And so it went for more than forty years.

Given the context, the official stance vis-à-vis uranium miners amounted to little more than a quiet tally of the death toll. Even the Public Health Service (PHS), which called in 1957 for “immediate application of corrective measures” to avert an “impending public health disaster” spawned by radon inhalation among miners, was shortly subordinated to the AEC’s demand that the truth be hidden.⁶² Victor E. Archer, an epidemiologist with the PHS’s National Institute for Occupational Safety and Health (NIOSH), spelled this out in 1977, during testimony entered in a suit brought by a group of terminally ill Navajo miners and survivors of those already dead.

Archer testified that he and his colleagues had caved in to AEC and PHS pressures not to publicize the [radon] hazard: “We did not want to rock the boat....[W]e had to take the position that we were neutral scientists trying to find out what the facts were, that we were not going to make any public announcements until the results of our scientific study were completed. Official pressures to “monitor” the disaster without informing those at risk or forcing [mining] companies to reduce the hazard led PHS scientists to characterize their study as a “death watch” or “dead body approach.” A federal judge [Aldon Anderson] involved in the Navajo case charged that U.S. atomic authorities had failed to warn the miners in order to guarantee a “constant, uninterrupted and reliable flow” of uranium ore “for national security purposes.”⁶³

An efficient system for delivering huge quantities of uranium had become an especially high priority for the U.S. military when the Soviet Union, years ahead of expectations, tested a nuclear device of its own on 23 September 1949. This set in motion a mad scramble to amass ever greater numbers of increasingly more powerful and sophisticated atomic weapons, as well as a burgeoning number of nuclear reactors, located on both sides of the Atlantic.⁶⁴ Thus guaranteed the sustained profitability of such enterprises, and shortly immunized against any liabilities they might entail, America's major corporations entered into uranium mining, milling, and related activities with a vengeance, completely supplanting the first generation of Navajo miners' "mom and pop" operations by the end of 1951.⁶⁵

This sudden and massive corporate tie-in to the expansion of U.S. uranium production did not, however, remove the burden of supply from the shoulders of Native North America. Rather, such weight was increased dramatically. Although only about 60 percent of uranium deposits in the United States are situated on American Indian reservations—most of it in the so-called Grants Uranium Belt of northern New Mexico and Arizona—well over 90 percent of all the uranium ever mined in the United States had been taken from such sources by the time the AEC's domestic ore-buying program was phased out in 1982.⁶⁶

Hence, while the USSR and its satellites relied on slave labor provided by hundreds of thousands of political prisoners in meeting their production quotas, the United States utilized its internal, indigenous colonies for the same purpose.⁶⁷ Not only did the workforce harnessed to the tasks of uranium mining and milling remain disproportionately Native, but the vast majority of extraction and processing facilities were also situated in Indian country, conveniently out of sight and mind of the general public. Much the same can be said with respect to weapons research, testing and the disposal of radioactive waste by-products. I will examine each of these components of the nuclear process in turn.

Mining

The first large-scale uranium mine in the United States was opened under AEC/BIA sanction by the Kerr-McGee Nuclear Corporation in 1952 on the Navajo Reservation outside the town of Shiprock, New Mexico. One hundred Navajos were hired to perform the underground labor—at about two-thirds the prevailing off-reservation pay scale for comparable work—in what was ostensibly a ventilated mine shaft.⁶⁸ When a federal inspector visited the mine a few months after it opened, however, he discovered that the ventilator fans were not functioning. When he returned three years later, in 1955, they were still idle.⁶⁹ By 1959, radon levels in the mine shaft were routinely testing at ninety to one hundred times maximum safe levels, a circumstance that would remain essentially unchanged until the ore played out and Kerr-McGee closed the mine in 1970.⁷⁰

Of the approximately 150 Navajo miners who worked below ground at Shiprock over the years, eighteen had died of radiation-induced lung cancer by 1975; five years later, another twenty were dead of the same disease, while

the bulk of the rest had been diagnosed with serious respiratory ailments.⁷¹ Much the same situation pertained to Native employees working in the shaft at Kerr-McGee's second mining operation on Navajo land, opened at Red Rock in 1953. By 1979, fifteen were dead of lung cancer and dozens of others had been diagnosed with that malady and/or respiratory fibrosis.⁷² The same rates prevail among the more than 700 men who worked underground for Kerr-McGee at Grants, New Mexico, the largest uranium shaft mining operation in the world.⁷³ Of the original 6,000 or so miners of all races employed below ground in the Grants Belt, Victor Archer has estimated that 1,000 will eventually die of lung cancer.⁷⁴

Nonetheless, such mines proliferated on the reservation throughout the remainder of the 1950s, as the AEC, with the active complicity of the BIA, entered into a host of additional contracts, not only with Kerr-McGee, but also with corporations like Atlantic-Richfield (ARCO), AMEX, Foote Mineral, Utah International, Climax Uranium, United Nuclear, Union Carbide (a chameleon formerly known as the Vanadium Corporation of America and now called Umetco Minerals Corporation), Gulf, Conoco, Mobil, Exxon, Getty, Sun Oil, Standard Oil of Ohio (Sohio), and Rockwell International.⁷⁵ As of 1958, "the Bureau of Indian Affairs reported that over 900,000 acres of tribal land were leased for uranium exploration and development."⁷⁶ From 1946 to 1968, well over thirteen million tons of uranium ore were mined on Navajo lands—some 2.5 million tons at Shiprock alone—and still the rate of increase grew.⁷⁷ By late 1976, the year that represented the very peak of the uranium frenzy afflicting the Colorado Plateau, the BIA had approved a total of 303 leases encumbering a quarter-million acres of Navajo land for corporate mining and milling purposes.⁷⁸

Aside from the effects of all this upon those working underground, the shaft mining on Navajo lands had an increasingly negative impact upon the physical well-being of their families and communities on the surface. One indication of this resides in the fact that, once real ventilation of the mines began in the mid-1960s, the vents were often situated right in the middle of residential areas. The area's inhabitants were then forced to breath the same potent mixtures of radon, thoron, and other toxic substances that were plaguing their husbands, fathers, and neighbors working below.⁷⁹ Then there was the matter of pumping out the groundwater that seeped constantly into scores of the deeper shafts—a process called dewatering. All of the water was heavily contaminated. To appreciate the volume of this outpouring, it should be considered that just one site, Kerr-McGee's Church Rock No. 1 Mine, was pumping more than 80,000 gallons of irradiated effluents a day into the local supply of surface water in 1980.⁸⁰

The millions of gallons of radioactive water [released in this fashion] carry deadly selenium, cadmium, and lead that are easily absorbed into the local food chain, as well as emitting alpha and beta particles and gamma rays. Human ingestion of radioactive water can result in alpha particles recurrently bombarding human tissue and eventually tearing apart the cells comprising that tissue...causing cancer [and/or genetic mutation in offspring].⁸¹

Small wonder that by 1981 the Navajo Health Authority (NHA) had documented increasing rates of birth defects—notably cleft palate and Down's Syndrome—among babies born after 1965 in mine-adjacent reservation communities like Shiprock, Red Rock, and Church Rock.⁸² At the same time, it was determined that children living in such localities were suffering bone cancers at a rate five times the national average, ovarian cancers at an astonishing seventeen times the norm.⁸³ Yet another study concluded that, overall, there was “a twofold excess of miscarriages, infant deaths, congenital or genetic abnormalities, and learning disabilities among uranium-area families (compared with Navajo families in non-uranium areas).”⁸⁴ Although funding was requested to conduct more extensive epidemiological studies throughout the Grants Belt from the Department of Health, Education, and Welfare (DHEW), the request was promptly denied.

In fact, in 1983, one agency, the Indian Health Services [a subpart of DHEW, which was by then redesignated the Department of Health and Human Services] sent a report to congress...stating that there was “no evidence of adverse health effects on Indians in uranium development areas and there is no need for additional studies or funding for such studies.”⁸⁵

Meanwhile, beginning in 1952, an ARCO subsidiary, the Anaconda Copper Corporation, had been operating under AEC/BIA authority on the nearby Laguna Reservation, near Albuquerque. By the early 1970s, the approximately 2,800 acres of Anaconda's Jackpile-Paguate complex at Laguna—from which 22 million tons of ore and more than 44 million tons of other minerals were removed—was the largest open pit uranium mine in the world.⁸⁶ Ultimately, the excavation went so deep that groundwater seepage became as much an issue as in a shaft mine.

[Anaconda's] mining techniques require “dewatering,” i.e., the pumping of water contaminated by radioactive materials to facilitate ore extraction. Since 1972, the Jackpile Mine has wasted more than 119 gallons per minute through this dewatering procedure. Altogether more than 500 million gallons of radioactive water have been discharged [into] a 260-acre tailings pond [from which it] either sinks back into the aquifer, evaporates, or seeps out into the arroyos and drainage channels of the tiny Río Mequino stream that is fed by a natural spring near the tailings dam.⁸⁷

In 1972, and again in 1977, the Environmental Protection Agency (EPA) notified the Laguna tribal council that the Río Molino and nearby Río Paguate, both of which run through the Anaconda leasing area and comprise the Pueblo's only source of surface water, were badly contaminated with radium 226 and other heavy metals.⁸⁸ This was followed, in 1979, by a General Accounting Office announcement that the aquifer underlying the entire Grants Belt, from which Laguna draws its groundwater, was similarly polluted.⁸⁹ The trade-off was, of course, jobs. But while most able-bodied Lagunas and a considerable proportion of neighboring Acomas were employed by the

corporation—a matter touted by the BIA as a “miracle of modernization”—most received poverty-level incomes.⁹⁰ And, although the adverse health effects of open pit uranium mining seem somewhat less pronounced than those associated with shaft mining, disproportionately high rates of cancer among long-term miners were being noted by the early 1980s.⁹¹

All told, about 3,200 underground and 900 open pit miners were employed in uranium operations by 1977, and Kerr-McGee was running a multimillion-dollar U.S. Department of Labor-funded job training program in the Navajo community of Church Rock, Arizona, to recruit more.⁹² The stated governmental/corporate objective was to create a workforce of 18,400 underground and 4,000 open pit miners to extract ore from approximately 3.5 million acres along the Grants Belt by 1990.⁹³ Only the collapse of the market for U.S. “domestic” uranium production after 1980—the AEC met its stockpiling quotas in that year and it quickly became cheaper to acquire commercially designated supplies abroad, first from Namibia, then from Australia, and finally from the Native territories of northern Saskatchewan in Canada—averted realization of this grand plan.⁹⁴

As the dust settled around the Four Corners, the real outcomes of uranium mining began to emerge. The AEC’s constellation of corporations had profited mightily as a result. This was due not only to the corporations’ refusal to provide even the most rudimentary forms of worker safety or their payment of the artificially depressed wages prevailing in reservations’ colonial economies, but also to the BIA’s written contracts that required the corporations to pay royalties pegged at an average of only 3.4 percent of market price in an environment in which 15 percent was the normative standard.⁹⁵ Moreover, the contracts often included no clauses requiring postmining cleanup of any sort, thus sparing Kerr-McGee and its cohorts what would have been automatic and substantial costs of doing business in off-reservation settings. When lucrative mining was completed, the corporations were thus in a position to simply close up shop and walk away.⁹⁶

The already much-impooverished indigenous nations upon which the uranium extraction enterprise had been imposed (which seldom if ever made money from the process) were then left holding the bag.⁹⁷ On the Navajo Reservation, this will involve cleaning up hundreds of abandoned mine shafts ranging from fifty to several hundred feet in depth, some subject to caving in and all of them steadily emitting radon and thoron from their gaping maws.⁹⁸ At Laguna, conditions are even worse.⁹⁹ As Joseph Wagoner, director of epidemiological research for NIOSH, would later put it with conspicuous understatement, the situation presents “serious medical and ethical questions about the responsibility [not just of the corporations, but] of the federal government, which was the sole purchaser of uranium during [much of] the period.”¹⁰⁰

Milling

Milling, the separation of pure uranium from its ore, is the first stage of the uranium production process. Ore pockets across the Grants Belt range from .4 to 3 percent uranium content, yielding an average of about four pounds of

“yellowcake” per ton.¹⁰¹ The remaining 1,996 pounds per ton of waste—reduced during milling to the consistency of coarse sand called tailings—invariably accumulate in huge piles alongside the mills, which for reasons of cost efficiency tend to be situated in close proximity to the mines. Tailings retain approximately 85 percent of the radioactivity of the original ore, have a half-life estimated at 10,000 years, and are a source of continuous radon and thoron gas emissions. They are also subject to wind dispersal and constitute an obvious source of groundwater contamination through leaching.¹⁰²

As with uranium mining, over 90 percent of all milling done in the United States occurred on or just outside the boundaries of American Indian reservations.¹⁰³ Also, as was the case in the mines, “conditions in the mills were deplorable.”¹⁰⁴ Even the most elementary precautions to assure worker protection were ignored as an “unnecessary expense.” As Laguna poet Simon J. Ortiz, who was employed by Kerr-McGee during the early 1960s, would later reflect:

Right out of high school I worked in the mining and milling region of Ambrosia Lake. I was nineteen years old....At the mill, I worked in crushing, leaching, and yellowcake, usually at various labor positions. ...I had a job, and for poor people with low education and no skills and high unemployment, that was the important thing: a job....In 1960, there was no information about the dangers of radiation from yellowcake with which I worked....In the milling operation at the end of the leaching and settling process, the yellow liquid was drawn into dryers that took the water out. The dryers were screen constructions which revolved slowly in hot air; yellow pellets were extruded and crushed into fine powder. The workers were to keep the machinery operating, which was never smooth, and most of the work was to keep it in free operation; i.e., frequently having to unclog it by hand. There was always a haze of yellow dust flying around, and even though filtered masks were used, the workers breathed in the fine dust. It got in the hair and cuts and scratches and in their eyes. I was nineteen then, and twenty years later I worried about it.¹⁰⁵

The situation was so acute at Kerr-McGee’s first mill on the Navajo Reservation, established at Shiprock in 1953, that after it was abandoned in 1974 inspectors discovered that more than \$100,000 in uranium dust had settled between two layers of roofing. Former workers recalled having been routinely instructed by their supervisors to stir yellowcake by hand in open, steam-heated floorpans.¹⁰⁶ Needless to say, by 1980, those who had been lured into the mills with the promise of a small but steady paycheck during the 1950s and 1960s were suffering rates of lung cancer and other serious respiratory illnesses rivaling those of their counterparts in the mines.¹⁰⁷

By far the greater impact of milling, however, has been upon the broader Navajo, Laguna, and Acoma communities. The environmental degradation inflicted by a single mill, the Kerr-McGee plant at Grants—once again, the largest such facility in the world—may equal that of all the shaft mines along the uranium belt combined. At its peak, the monstrosity processed 7,000 tons

of ore a day, piling up 23 million tons of tailings in a one-hundred-foot-high mound that covers 265 acres.¹⁰⁸ And this is just one of more than forty mills, several of them not much smaller. Each operated simultaneously on and around Navajo lands during the late 1970s.¹⁰⁹ A similar situation prevailed at plants established by Kerr-McGee, Sohio-Reserve, Bokum Minerals, and several other corporations in the immediate vicinity of Laguna and Acoma Pueblos.¹¹⁰

At the Bluewater Mill, eighteen miles west of the Laguna Reservation [on the western boundary of Acoma, a thirty-mile trip by rail from the Jackpile-Paguate complex, with raw ore hauled in open gondolas] near the bed of the San Jose River, Anaconda has added a 107-acre pond and a 159-acre pile comprising 13,500,000 tons of “active” tailings and 765,033 tons of “inactive” residues.¹¹¹

In August 1978, it was discovered that, as a means of “holding down costs,” Anaconda made massive use of tailings at Laguna as fill in its improvements on the reservation road network. At the same time, it was revealed that tailings constituted the “sand and gravel mix” of concrete with which the corporation had—with much fanfare about the civic benefits—poured footings for a new tribal council building, community center, and housing complex.¹¹² All were seriously irradiated as a result, a matter which may well play into increasing rates of cancer and birth defects, even among the non-miner sectors of Laguna’s population.¹¹³

Probably the worst single example of mill-related contamination occurred about a year later, on 16 July 1979, at the United Nuclear plant in Church Rock, New Mexico, when a tailings dam gave way, releasing more than one hundred million gallons of highly radioactive water into the nearby Río Puerco.¹¹⁴ About 1,700 Navajos living downstream were immediately affected, as were their sheep and other livestock, all of whom depended on the river for drinking water.¹¹⁵ Shortly thereafter, with spill-area cattle exhibiting unacceptably high levels of lead 210, polonium 210, thorium 230, radium 236, and similar substances in their tissues, all commercial sales of meat from such animals were indefinitely prohibited.¹¹⁶

Still, even as the ban went into effect, Indian Health Services (IHS) Area Director William Moehler approved consumption of the very same mutton and beef by local Navajos, rather than call for allocation of federal funds in order to provide emergency rations to those most directly at risk.¹¹⁷ At about the same time, a request by downstream Navajos for United Nuclear to provide them with trucked-in water, at least in quantities sufficient to meet the afflicted human population’s immediate needs, was met with a flat refusal.¹¹⁸ The corporation stonewalled for another five years—until it was revealed by the Southwest Research and Information Center, an Albuquerque-based environmental organization, that it had known about cracks in the dam at least two months before it broke and had failed to repair it—before agreeing to a minimal, state-facilitated settlement of \$525,000.¹¹⁹

By and large, however, it was not outright disasters such as the Church Rock spill, but the huge and rapidly proliferating accumulation of mill tailings

throughout the Four Corners region—more than a half-billion tons in two hundred locations by 1979, figures that were projected to double by the end of the century—that provoked a team of Los Alamos experts, utterly at a loss as to what to do with such vast quantities of radioactive waste, to recommend the “zon[ing] of uranium mining and milling districts so as to forbid human habitation.”¹²⁰ The idea dovetailed perfectly with the conclusions drawn in a contemporaneous study, undertaken by the National Academy of Sciences (NAS), reporting that desert lands subjected to strip mining can never be reclaimed.¹²¹ Since the Peabody Coal Company, among others, was engaged in ever more massive coal stripping operations on Navajo lands,¹²² the logical outcome of the Los Alamos and NAS studies was formulation of a secret federal “policy option” declaring the Four Corners and the Black Hills region of the northern plains,¹²³ “national sacrifice areas in the interests of energy development.”¹²⁴

Not coincidentally, the pair of localities selected contained the largest and second-largest concentrations of reservation-based Indians in the United States: the Navajo, with more than 120,000 residents in 1980, is by far the biggest reservation both in size and population in the United States. Also sacrificed in the Four Corners region would be—at a minimum—the Hopi, Zuñi, Laguna, Acoma, Isleta, Ramah Navajo, Cañoncito Navajo, Ute Mountain, and Southern Ute reservations. The 50,000-odd residents of the “Sioux Complex” in North and South Dakota—Pine Ridge, Rosebud, Crow Creek, Cheyenne River, and Standing Rock, in particular—make up the second most substantial concentration of Native peoples in the United States. Also sacrificed in the Black Hills region would be the Crow and Northern Cheyenne reservations in Montana, and possibly the Wind River Reservation in Wyoming.¹²⁵

As American Indian Movement leader Russell Means observed in 1980, shortly after these energy plans had been disclosed, sacrificing the land base of land-based peoples is tantamount to sacrificing the peoples themselves, a prospect he aptly described as genocide while calling for appropriate modes of resistance.¹²⁶

Although a policy of deliberately creating national sacrifice areas out of American Indian reservations was never formally implemented, the more indirect effect may well be the same. With windblown tailings spread over wide tracts of Navajo lands, with both ground and surface water contaminated with all manner of radioactive substances, and with Navajo children literally using abandoned tailings mounds as sand piles, it is not unreasonable to suspect that both the land and the people have already been sacrificed to the United States armaments development.¹²⁷ If so, they and their counterparts at Laguna, Acoma, and elsewhere will have become victims of what may be, to date, history’s subtlest form of physical extermination.¹²⁸

Weapons Research and Production

The Los Alamos lab might well have extended its zoning recommendations to include not just uranium mining and milling districts, but localities in which nuclear weapons research and production have been carried out, beginning with itself. Here again, although the sites at which yellowcake is enriched and/or

transformed into plutonium have been scattered across the country in localities not typically associated with indigenous people, the great weight of contamination has been off-loaded by the dominant society onto Indian country.¹²⁹

The extent of radioactive contamination at Los Alamos itself is astonishing. A half-century of nuclear weapons research on the forty-three-square-mile "campus"—adjacent to not only San Ildefonso, but also the Santa Clara, San Juan, Jemez, and Zia reservations—has produced some 2,400 irradiated pollution sites containing "plutonium, uranium, strontium-90, tritium, lead, mercury, nitrates, cyanides, pesticides and other lethal leftovers."¹³⁰ A single 1950 experiment in which "simulated nuclear devices" were exploded in order to track radioactive fallout patterns was kept secret for decades and left nearby Bayo Canyon heavily contaminated with strontium.¹³¹ The facility also has a long history of secretly and illegally incinerating irradiated wastes—a practice producing significant atmospheric contamination—as was acknowledged by the EPA in 1991.¹³²

The greatest concentration of hazardous materials in the Los Alamos compound is situated in what is called "Area G," which

began taking radioactive waste in 1957. Since 1971, 381,000 cubic feet of [lab]-generated transuranic [plutonium-contaminated] waste has been stored there; no one knows how much went in before 1971, since records are scanty. Wastes were interred without liners or caps, in bulldozed pits from which they may be presumed to be leaking.¹³³

This, in combination with the lab's chronic release of radioactive substances into the atmosphere, is thought to be correlated to dramatic increases in cancers and birth defects among local Native populations during the past twenty years.¹³⁴ Plutonium contamination of surface water has been found downstream at least as far as the Cochiti Reservation thirty miles away.¹³⁵ At present, Area G is slated for considerable expansion.¹³⁶ In the new plan, strongly opposed by area Indians, the area "would be able to contain 475,000 cubic yards of mixed-waste in pits 2,000 feet long and divided into 25,000 cubic yard segments."¹³⁷

An even worse situation prevails at Hanford, which was closed in 1990. Despite frequent official denials that it presented any sort of public health hazard during the span of its operation, the complex exhibits an unparalleled record of deliberate environmental contamination, beginning with a secret experimental release of radioactive iodides in 1945, the first of seven, which equaled or surpassed the total quantity of pollutants emitted during the disastrous 1986 Soviet reactor meltdown at Chernobyl.¹³⁸ Also in 1945, Hanford officials secretly instructed staff to begin "disposing" of irradiated effluents by the simple expedient of pouring them into unlined "sumps" from which they leached into the underlying aquifer. All told, before the plant was closed, something in excess of 440 billion gallons of water, laced with everything from plutonium to tritium to ruthenium, had been dumped in this "cost-efficient" manner.¹³⁹

Another 900,000 gallons of even more highly radioactive fluids were stored in a 117-unit underground "tank farm" maintained under contract by ARCO, several components of which were found to be leaking badly.¹⁴⁰ Not

only has regional groundwater been severely contaminated, but wastes have passed into the nearby Columbia River in quantities sufficient to irradiate shellfish at the river's mouth, more than two hundred miles distant.¹⁴¹

Not only has the Hanford plant been discharging and leaking radiation into the river for forty-five years, but serious accidents have occurred at the reactors. One could perhaps excuse the accidental release of radiation [if not its cover-up], but on several occasions huge clouds of isotopes were created knowingly and willingly. In December [1952, to provide another example,] about 7,800 curies of radioactive Iodine 131 were deliberately [and secretly] released in an experiment designed to detect military reactors in the Soviet Union (only 15 to 24 curies of Iodine 131 escaped at Three Mile Island in 1979).¹⁴²

The true extent of the ecological holocaust perpetrated at and around Hanford is unknown, and it is likely to remain so in the foreseeable future, given that most information about the facility is permanently sealed as a matter of "national security," and DoE, Pentagon, and corporate officials claim to have "lost" much of what is supposedly accessible.¹⁴³ The information that has been released, however, speaks for itself:

Abnormally high incidence of thyroid tumors and cancers have been observed in populations living downstream from Hanford. Strontium 90, Cesium 137, and Plutonium 239 have been released in large quantities, as was, between 1952 and 1967, Ruthenium 106. People in adjacent neighborhoods [notably, the Yakimas and nearby Spokanes] were kept uninformed about these releases—before, during and after—and none were warned that they were at risk for subsequent development of cancer. (Some experts have estimated that downwind farms and families received radiation doses ten times higher than those that reached soviet people living near Chernobyl in 1986).¹⁴⁴

In sum, the probability is that Los Alamos, Hanford, and surrounding areas should be added to the extensive geographical sacrifices already discussed with respect to uranium mining and milling. To the extent that this is true—and it almost certainly is at Hanford—several more colonized indigenous nations must be added to the roster of those implicitly but officially placed among those peoples whose sacrifice is deemed necessary, useful, or at least acceptable, in the interests of U.S. nuclear development.

Weapons Testing

Nuclear weapons, once designed, must be tested. During the period immediately following World War II, the United States asserted its trust authority over the Marshall Islands, gained by its defeat of Japan, for purposes of conducting more than one hundred such tests on the Natives' mid-Pacific atolls by 1958.¹⁴⁵ Meanwhile, the search for a more "suitable" continental locality, code-named Nutmeg, began as early as 1948. Two years later, the

AEC/Pentagon combo finally settled on the Las Vegas/Tonopah Bombing and Gunnery Range in Nevada (now called the Nellis Range), an area that “really wasn’t much good for anything but gunnery practice—you could bomb it into oblivion and never notice the difference.”¹⁴⁶

Of course, nobody bothered to ask the Western Shoshone, within whose unceded territory the facility was established, whether they felt this was an acceptable use of their land, or whether they were even willing to have it designated as part of U.S. public domain for any purpose.¹⁴⁷ Instead, in 1952, having designated 435,000 acres in the Yucca Flats area of Nellis as a Nevada Test Site—another 318,000 acres were added in 1961, bringing the total to 753,000—the AEC and its military partners undertook the first of what by now adds up to nearly one thousand atmospheric and underground test detonations.¹⁴⁸ In the process, it converted the peaceful and pastoral Shoshones, who had never engaged in an armed conflict with the United States, into what, by any estimation, is far and away “the most bombed nation on earth.”¹⁴⁹

The deadly atomic sunburst over Hiroshima, in 1945, produced 13 kilotons of murderous heat and radioactive fallout. At least 27 of the 96 above ground bombs detonated between 1951 and 1958 at the Nevada Test Site produced a total of over 620 kilotons of radioactive debris that fell on downwinders. The radioactive isotopes mixed with the scooped-up rocks and earth of the southwestern desert lands and “lay down a swath of radioactive fallout” over Utah, Arizona, and Nevada. In light of the fact that scientific research has now confirmed that any radiation exposure is dangerous, the “virtual inhabitants” (more than 100,000 people) residing in the small towns east and south of the test site were placed in...jeopardy by the AEC atomic test program (emphasis added).¹⁵⁰

Those most affected by the estimated twelve billion curies of radioactivity released into the atmosphere during the past forty-five years have undoubtedly been the Native communities scattered along the periphery of Nellis.¹⁵¹ These include not only three Shoshone reservations—Duckwater, Yomba, and Timbisha—but the Las Vegas Paiute Colony and the Pahrump Paiute, Goshute, and Moapa reservations as well. Their circumstances have been greatly compounded by the approximately 900 underground test detonations that have, in a region where surface water sources are all but nonexistent, resulted in the contamination of groundwater with plutonium, tritium, and other radioactive substances at levels up to 3,000 times maximum “safe” limits.¹⁵²

Radionuclides released to groundwater include: antimony-125, barium-140, beryllium-7, cadmium-109, cerium-141, cesium-137, cobalt-60, europium-155, iodine-131, iridium-192, krypton, lanthanum-140, plutonium-238, plutonium-239, plutonium-240, rhodium-106, ruthenium-103, sodium-22, strontium-90, and tritium.¹⁵³

Although the government has been steadfast in its refusal to conduct relevant epidemiology studies in Nevada, especially with respect to indigenous

peoples, it has been credibly estimated that several hundred people had already died of radiation-induced cancers by 1981.¹⁵³ Rather than admit to any aspect of what it was doing, the military simply gobbled up increasingly gigantic chunks of Shoshone land, pushing everyone off and creating ever-larger “security areas” that rendered its activities less and less susceptible to any sort of genuine public scrutiny.¹⁵⁵

Today, in the state of Nevada, in addition to Nellis Air Force Base and Nevada Test Site, we can add the following military reservations: Fallon Navy Training Range Complex with its airspace; the Hawthorne Army Ammunition Depot, with its restricted airspace; the Reno Military Operations Area Airspace; the Hart Military Operations Area Airspace; the Paradise Military Operations Area Airspace; and parts of the Utah Training Range Complex with its airspace. Military ranges in Nevada alone amount to four million acres. Approximately forty percent of Nevada’s airspace is designated for military use.¹⁵⁶

Across the state line in California—it is separated from the gargantuan sprawl of military facilities in Nevada only by the width of the interposed Death Valley National Monument—lies the million-acre China Lake Naval Weapons Center.¹⁵⁷ Butted up against the Army’s equally sized estate at Fort Irwin, and close to both the half-million-acre Edwards Air Force Base and the 800,000-acre Marine Corps Base at Twentynine Palms, China Lake—an oddly-named facility in that it incorporates no lake at all—uses its share of the Mojave Desert in the same manner as White Sands, only more so.¹⁵⁸ Established in November 1943 and expanded steadily thereafter, it credited itself by 1968 as the location in which “over 75% of the airborne weapons of the free world [and] 40% of the world’s conventional weapons” had been tested and perfected.¹⁵⁹ As in Nevada, local indigenous communities, both Shoshone and Paiute, have been pushed out while their lands, including sacred sites, have been bombed, strafed, and shelled relentlessly for more than fifty years.¹⁶⁰

Probably the only concession made to Native peoples in the region during this entire period has been that the three largest nuclear devices ever detonated underground, culminating in a monstrous five-megaton blast in 1971, were exploded, not at the Nevada Test Site, but on Amchitka Island, off the coast of Alaska. The reason for this change in procedure had nothing to do with concern for human beings, however. Rather, it was brought on by fears among AEC officials that the shock waves from such large blasts might cause serious damage to casinos and other expensive buildings in downtown Las Vegas, thereby provoking a backlash from segments of the regional business community.¹⁶¹ Hence, the brunt of the environmental and biological consequences wrought by the three biggest bangs was shifted from the Indians of Nevada to the Aleuts indigenous to the Aleutian Archipelago.¹⁶²

Exactly how large an area has been sacrificed to nuclear testing and related activities is unknown, but it most certainly includes the bulk of southern Nevada and contiguous portions of California.¹⁶³ Indications are that it may encompass northern Nevada as well, given the insistence of Reagan-era Defense Secretary

Caspar Weinberger—selected for this position, appropriately enough, on the basis of his credentials as a senior vice president of the Bechtel Corporation, the second-largest U.S. nuclear engineering contractor—that the rail-mounted MX missile system should be sited there, a move that would have effectively precluded human habitation.¹⁶⁴ Given prevailing wind patterns, the sacrifice area likely encompasses northwestern Arizona as well, including three indigenous nations—Hualapi, Havasupi, and the Kaibab Reservation—located there.¹⁶⁵ Also at issue are the more westerly reaches of Utah, a region which includes the small Goshute and Skull Valley reservations in addition to another huge complex of military bases and proving grounds.¹⁶⁶

Waste “Disposal”

Plutonium, an inevitable byproduct of most reactors and the essential ingredient in nearly all nuclear weapons, has been aptly described as “the most toxic substance in the universe.”¹⁶⁷ Only ten micrograms, a microscopic quantity, is an amount “almost certain to induce cancer, and several grams...dispersed in a ventilation system, are enough to cause the death of thousands.”¹⁶⁸ Indeed, it has been estimated that a single pound of plutonium, if evenly distributed throughout the earth’s atmosphere, would be sufficient to kill every human being on the planet.¹⁶⁹ Viewed from this perspective, the quantity of this material created by the United States during the course of its arms race with the Soviet Union—as of 1989, the U.S. had amassed some 21,000 nuclear weapons—is virtually incomprehensible.¹⁷⁰

By 1995, military weapons-grade plutonium, in the form of active and dismantled bombs, amounted to 270 metric tons. The commercial stockpile of plutonium in nuclear-reactor wastes and isolates from spent fuel amounts to 930 metric tons and will double to 2,130 tons by 2005, only ten years from now. “Every four or five years we’re [now] making about as much plutonium in the civil sector as we did during the whole Cold War.” And this is only plutonium. Fission reactors create eighty radionuclides that are releasing “ionizing radiation,” which causes harm to human beings in the form of genetic mutations, cancer, and birth defects.¹⁷¹

Leaving aside the proliferation of commercial reactors and other such facilities, as well as the mining and milling zones, there are 132 sites in thirty states where one or another facet of nuclear weapons production has left radioactive contamination of varying orders of magnitude, all of them unacceptable.¹⁷² The DoE currently estimates that it will cost about \$500 billion to return these to habitable condition. This is an absurdly low figure when considering that the department elsewhere admits that neither concepts nor technologies presently exist to begin cleaning up “large contaminated river systems like the Columbia, Clinch, and Savannah rivers, most groundwater [and] nuclear test areas on the Nevada Test Site.”¹⁷³

It is also conceded that there is no known method of actually “disposing” of—in other words, decontaminating—plutonium and other radioactive

wastes after they have been cleaned from the broader environment.¹⁷⁴ Instead, such materials, once collected, can only be sealed under the dubious premise that they can be somehow safely stored for the next 250,000 years.¹⁷⁵ The sheer volume is staggering: “Hanford stores 8,200,000 cubic feet of high-level waste and 500,000 cubic feet of transuranic waste. Hanford buried 18,000,000 cubic feet of ‘low-level’ waste and 3,900,000 cubic feet of transuranic waste.”¹⁷⁶ And, daunting as they are, these numbers—associated exclusively with weapons, weapons production, and commercial reactors—don’t begin to include the millions of tons of accumulated mill tailings and similar byproducts of “front end” nuclear processing.¹⁷⁷

Such facilities as now exist to accommodate warhead and reactor wastes are all temporary installations designed to last a century or less, even under ideal sets of conditions that seem never to prevail.¹⁷⁸ The steadily escalating rate of waste proliferation has led to the burning of plutonium and other substances—a practice that certainly reduces the bulk of the offending materials, but risks sending clouds of radioactivity into the atmosphere¹⁷⁹—and an increasingly urgent quest for safer interim facilities, called “monitored retrievable storage” (MRS) sites, and permanent repositories into which their contents could eventually be moved.¹⁸⁰ Here, as always, emphasis has been on off-loading the problem onto captive indigenous nations.¹⁸¹

The reason, predictably enough, is that despite a chorus of official assurances that neither an MRS nor a repository would present a health hazard, the precise opposite is true. John Gofman has calculated that if only 0.01 percent of the plutonium now in storage were to escape into the environment—a record of efficiency never remotely approximated by the nuclear establishment—some 25 million people could be expected to die of resulting cancers during the following half-century.¹⁸² Those most proximate to any dump site can of course expect to suffer the worst impact. Consequently, only one county in the United States has proven amenable to accepting an MRS within its boundaries, and its willingness to do so was quickly overridden by the state.¹⁸³

Federal authorities have therefore concentrated all but exclusively on siting the dumps in Indian country. As longtime indigenous rights activist Grace Thorpe has observed:

The U.S. government targeted Native Americans for several reasons: their lands are some of the most isolated in North America, they are some of the most impoverished and, consequently, most politically vulnerable and, perhaps most important, tribal sovereignty can be used to bypass state environmental laws....How ironic that, after centuries of attempting to destroy it, the U.S. government is suddenly interested in promoting Native American sovereignty—just to dump its lethal garbage.¹⁸⁴

There can be little doubt that during the early 1990s, DoE negotiators played heavily upon the colonially imposed destitution of indigenous peoples in peddling their wares.

16 tribes initially applied for \$100,000 grants from DOE to study the MRS option on Native lands. The lucrative DOE offer included up to

\$3 million to actually identify a site for an MRS and as much as \$5 million per year for any tribe to accept the deal. The government also offered to build roads, hospitals, schools, railroads, airports and recreation facilities [most of which the Indians should have been receiving anyway].¹⁸⁵

Another \$100,000 was passed along in 1992 to the federally oriented National Congress of American Indians (NCAI) to garner its assistance in selling the proposition to its constituents, while a whopping \$1.2 million—80 percent of DoE's budget for such purposes—was lavished on the Council of Energy Resource Tribes (CERT), a federally and corporately funded entity created for the sole purpose of systematizing the wholesale brokering of Native mineral rights.¹⁸⁶ Despite the best efforts of both organizations—CERT in particular went beyond the MRS concept to promote acceptance of a repository at Hanford by the Yakimas, Nez Percé, and Umatillas—the campaign was largely a failure.¹⁸⁷ By 1995, only three reservations—Mescalero, Skull Valley, and Fort McDermitt in northern Nevada—indicated varying degrees of willingness to accept a dump, regardless of the material incentives offered.

The reasoning that led to this result is instructive. At Skull Valley, the feeling expressed by many residents is that they and their land may already have been sacrificed, in part to radiation blown in over the years from the not distant Nevada Test Site, in part to a host of nuclear, chemical, and bacteriological contaminants emanating from military bases closer to home. Even the specific area committed as an MRS site has long been leased to several corporations as a rocket testing range.¹⁸⁸ As tribal member Leon Bear observes:

People need to understand that this whole area has already been deemed a waste zone by the federal government, the state of Utah, and the country....Tooele Depot, a military site, stores 40% of the nation's nerve gas and other hazardous gas only 40 miles away from us. Dugway Proving Grounds, an experimental life sciences center, is only 14 miles away, and it experiments with viruses like plague and tuberculosis. Within a 40 mile radius there are three hazardous waste dumps and a "low-level" radioactive waste dump. From all directions, north, south, east, and west we're surrounded by the waste of Tooele County, the state of Utah, and U.S. society.¹⁸⁹

The sentiment at Skull Valley, that it is better to at least charge for one's demise than endure the suffering free of charge, is shared by an appreciable segment of the Mescalero population. As one reservation resident noted, the feeling of many people is that "since they are getting impacted by nuclear waste [anyway] they should have a chance to benefit economically."¹⁹⁰ Or, as another put it, "The federal government has forced us to choose between being environmentally conscious [and] starving."¹⁹¹ Such perspectives notwithstanding, local activists like Rufina Laws were able to engineer a "no acceptance" vote on an MRS proposal at Mescalero during the winter of 1995. It seems that only a policy of outright bribery by pro-nuclear Tribal Chairman Wendell Chino—reputedly the payment of \$2,000 per yes vote—was sufficient

to reverse the outcome by a narrow margin in a second referendum conducted a few months later.¹⁹²

More important than such subsidies, however, may be the fact that many Mescaleros are now experiencing an overwhelming sense of hopelessness, based on the knowledge that they are just downwind from White Sands, and that—despite their strong objections—the first U.S. nuclear repository has been sited in the Carlsbad Caverns area, immediately to their east.¹⁹³ This is the so-called Waste Isolation Pilot Plant (WIPP), a plan to store virtually all military transuranics produced after 1970—57,359 cubic meters of it—in a sub-surface salt bed already scored by one of Operation Plowshare's underground nuclear detonations.¹⁹⁴

The disposal area will exceed 100 acres, although the site's surface area covers more than 10,000 acres...The repository's design calls for "creeping" salt to seal the wastes [2,150 feet below ground]—a process that is supposed to isolate the substances for tens of thousands of years. Controversy over the WIPP focuses on potential ground water contamination, gases which would be generated by the decomposing wastes, and the hazards posed by transporting approximately 30,000 truckloads of waste to the site, among other things.¹⁹⁵

It now appears that the deep salt beds below Carlsbad are not so dry as was once believed by the National Academy of Sciences. Moisture could lead both to relatively rapid corrosion of the storage canisters in which the repository's plutonium is to be contained and to correspondingly massive contamination of the underlying Rustler Aquifer.¹⁹⁶ Serious questions have also arisen as to whether the mass of materials stored in such close quarters—after accommodating its present allocation of transuranics, the WIPP will still retain some 70 percent of its space availability to meet future requirements, official shorthand for continued nuclear weapons production—might not "go critical" and thereby set off an incalculably large atomic explosion.¹⁹⁷

Even worse problems are evident at Yucca Mountain, located on the southwestern boundary of the Nevada Test Site, where a \$15 billion repository to accommodate 70,000 tons of mostly civilian high-level waste is being imposed on the long-suffering Western Shoshones and Paiutes.¹⁹⁸ Not only is "spontaneous detonation" just as much a threat as at the WIPP, but Yucca Mountain, located in a volcanically active region, is also undercut by no less than thirty-two geological fault lines.¹⁹⁹ Needless to say, no amount of engineering brilliance can ensure that the repository's contents will remain undisturbed through a quarter-million years of earthquakes interspersed with volcanic eruptions. Once again, however, the project is being moved forward as rapidly as possible.

As if this were not enough, it was announced in 1993 by the Southwestern Compact, a consortium of state governments, that it had "decided to keep the option" of siting a huge low-level waste dump in the Mojave Desert's Ward Valley, near the small town of Needles on the California/Arizona boundary.²⁰⁰ Envisioned as being large enough to accept the contents of all six existing—and failed—low-level facilities in the United States, with room to spare for the

next thirty years, the proposed site is less than eighteen miles from the Colorado River and directly above an aquifer.²⁰¹ It is also very close to the Fort Mojave, Chemehuvi Valley, and Colorado River Indian reservations, and upstream from those of the Cocopahs and Quechanis around Yuma, Arizona.

Taken as a whole, the pattern of using deserts as dumps that has emerged in nuclear waste disposal practices over the past decade serves to confirm suspicions, already well founded, that creation of sacrificial geographies within the United States has been an integral aspect of Cold War policies and planning for nearly fifty years.²⁰² In many ways, the siting of repositories in particular, since they are explicitly intended to remain in place forever, may be seen as a sort of capstone gesture in this regard. The collateral genocide of those indigenous peoples whose lands lie within the boundaries of the sacrifice zones, nations whose ultimate negation has always been implicitly bound up in the very nature and depth of their colonization, is thus, finally and irrevocably, to be consummated.²⁰³

FREEING THE MINER'S CANARY

The radioactive colonization of Native North America has involved fundamental miscalculations at a number of levels. In retrospect, the very idea that environmental contamination and subsequent epidemiologies could be contained within U.S. internal colonies, hidden from polite society and afflicting only those deemed most expendable by federal policymakers, seems ludicrous. Windblown uranium tailings have never known that they were supposed to end their ongoing dispersal at reservation boundaries, no more than irradiated surface water has realized it was meant to stop flowing before it reached the domain of settler society, or polluted groundwater that it was intended to concentrate itself exclusively beneath Indian wellheads. Still less have clouds of radioactive iodides and strontium-impregnated fallout been aware that they were scripted to remain exclusively within Yakima, Shoshone, or Puebloan territories.

As Felix S. Cohen once observed, American Indians serve as the proverbial "miner's canary" of U.S. social, political, and economic policies. Whatever is done to Indians, he said, invariably serves as a prototype for things intended by America's elites for application to others, often to society as a whole. The effects of policy implementation upon Indians can thus be viewed as an early warning device for the costs and consequences of policy formation upon broader society. In paying attention to what is happening to Indians, Cohen concluded, non-Indians act in their own self-interest; in the alternative, they will inevitably find themselves sharing the Indians' fate.²⁰⁴

Cohen's premise plainly holds in the present connection, and not simply in the more obvious ways. If the citizens of Troy, New York, which became an unanticipated hot spot for fallout from atmospheric testing during the early 1950s, can now make the same claims concerning its impacts as can the residents of Nevada,²⁰⁵ so too can everyone within a fifty mile radius of any of the more than one hundred nuclear reactors in the United States, all of them made possible by the uranium mined and milled on Native lands.²⁰⁶ And

there are scores of nuclear weapons storage facilities and manufacturing centers and more than four tons of plutonium and comparable materials missing from U.S. inventories by 1977.²⁰⁷

If the disposal of mountainous accumulations of transuranic and other wastes has become a problem admitting to no easy solution, its existence essentially accrues from the fact that even the most progressive and enlightened sectors of the settler society have busied themselves for forty years protesting nuclear proliferation at its tail-end rather than at its point(s) of origin. For all the mass actions they have organized at reactors and missile bases over the years, not one has ever been conducted at a mining/milling site like Church Rock, Shiprock, or Laguna.²⁰⁸ Had things been otherwise, it might have been possible to choke off the flow of fissionable materials at their source rather than attempting to combat them in their most proliferate and dispersed state(s).

In the end, however, the opposition has for the most part proven itself as willing to relegate Native people to stations of marginality, even irrelevancy, as has the order it ostensibly opposes. And here, to borrow from Malcolm X, it can be said that the chickens have truly come home to roost.²⁰⁹ This takes the form of the increasingly ubiquitous cancers that have made their appearance across the spectrum of American society since World War II, the spiraling rates of congenital birth defects and suppressed immune systems evident among those whose lives began during the 1940s or later.²¹⁰

These and myriad other radiation-induced maladies are things upon which plastering "no smoking" signs on every flat surface in North America will have absolutely no effect in curing.²¹¹ Wherein lies the cure? In a technical sense, it must be admitted that no one knows. We are very far down the road. The wages of radioactive colonialism are by and large being visited upon the colonizing society itself, and will likely continue to be so in what is, in human terms, a permanent fashion. Such effects as have already obtained may well prove irreversible.²¹²

Whether or not this is true, one thing is clear: any viable effort to counter the effects of nuclear contamination must begin by halting its continuing proliferation. Here, unavoidably, success devolves first and foremost upon devising ways and means of preventing still more uranium from coming out of the ground. Until that is accomplished, struggles to shut down individual reactors, to clean up specific mill sites and production facilities, to reduce the number of nuclear warheads in military inventories, or even to figure out how to dispose of the existing accumulation of wastes will ultimately prove futile.²¹³

The principle of course is as time-honored as it is true: to correct a problem it is necessary to confront its source rather than its symptoms. In and of itself, however, uranium mining is not the source of the affliction at hand. Underlying the mining process is the nature of the relationship imposed by the United States upon indigenous peoples within its borders, that of internal colonization, without which such things could never have happened in the first place. And underlying that is a mentality shared by the North American settler population as a veritable whole: a core belief that it is somehow inherently, singularly, even mystically, entitled to dominate all it encounters, pos-

sessing or at least benefiting from that which belongs to others regardless of the costs and consequences visited upon those thereby subjugated and dispossessed.²¹⁴

It can thus be said with certainty that if the dominant society is to have the least prospect of addressing the steadily mounting nuclear contamination of itself it has no real option but to end the radioactive colonization of Native North America. This can happen only if the U.S. elite are forced to abandon their ongoing pretense of holding legitimate and perpetual trust authority over Native peoples, thus facilitating the genuine exercise of indigenous self-determination and our more general decolonization.²¹⁵ In turn, this can happen only to the extent that there is a wholesale alteration in the “genocidal mentality” by which the settler population has presumed to conduct itself as it has.²¹⁶

Key to this last is a breakdown of the codes of denial, both individual and institutional, by which the settler society has always shielded itself from the implications of its own values and resulting actions.²¹⁷ The process is in part simply a matter of insisting that things be called by their right names rather than the noble-sounding euphemisms behind which reality has been so carefully hidden: terms like *discovery* and *settlement* do not reflect the actualities of invasion and conquest they are used to disguise; colonialism is not a matter of *trust*, it is colonialism, a crime under international law; genocide isn’t an inadvertent outcome of progress, it is genocide, an always avoidable crime against humanity; ecocide is not *development*, it is ecocide, the most blatant and irremediable form of environmental destruction; mere possession constitutes “nine-tenths of the law” only among thugs devoted to enjoying the fruits of an organized system of theft.²¹⁸

Thus accurately described, many of the measures heretofore accepted by the American public in the name of forging and defending its way of life become viscerally repulsive to average Americans no less than to anyone else. Unlike a society based on discovery and settlement, progress and trust, there are few who would queue up to argue the defensibility of a way of life predicated in and sustained by invasion, conquest, genocide, ecocide, colonization, and other modes of systemic theft. This is all the more true when it can be demonstrated, as it can in the present connection, that the process of intergroup victimization is bound to subject victims and victimizers alike to an identically ugly destiny. In sum, it is not unreasonable to expect an increasing proportion of the settler population to move towards the position sketched above, if not from a sense of altruism, then on the basis of newly perceived self-interest.²¹⁹

It is worth observing that the ensuing decolonization of Native North America would offer benefits to humanity extending far beyond itself. Every inch of territory and attendant resources withdrawn from U.S. “domestic” hegemony diminishes the relative capacity of America’s corporate managers to project themselves outward via multilateral trade agreements and the like, consummating a New World Order in which most of the globe is to be subordinated and exploited in accordance with models already developed, tested, and refined through their applications to Indian country.²²⁰ Overall, elim-

ination of this threat yields the promise of an across-the-board recasting of relations between human beings, and of humans with the rest of nature, which is infinitely more equitable and balanced than anything witnessed since the beginnings of European expansionism more than 500 years ago.²²¹

In the alternative, if the current psychopolitical/socioeconomic status quo prevails, things are bound to run their deadly course. Felix Cohen's figurative miners will inevitably share the fate of their canary, the genocide they so smugly allow as an "acceptable cost of doing business" blending perfectly into their own autogenocide until the grim prospect of species extinction has at last been realized. There is, to be sure, a certain unmistakable justice attending the symmetry of this scenario ("What goes around, comes around," as Charles Manson liked to say).²²² But, surely, we—all of us, settlers and Natives—owe more to our future generations than to bequeath them a planet so thoroughly irradiated as to deny them the possibility of life itself.

NOTES

1. Susan Griffin, *A Chorus of Stones* (New York: Double Day, 1992), 19.
2. *Lonewolf v. Hitchcock* (187 U.S. 553, 557, 1903). For context and analysis, see Carter Blue Clark, *Lonewolf v. Hitchcock: Treaty Rights and Indian Law at the End of the Nineteenth Century* (Lincoln: University of Nebraska Press, 1994).
3. See C. Harvey, "Congressional Plenary Power Over Indians: A Doctrine Rooted in Prejudice," *American Indian Law Review* 10 (1982).
4. See Ann Laquer Estin, "Lonewolf v. Hitchcock: The Long Shadow," in *The Aggressions of Civilization: Federal Indian Policy Since the 1880s*, eds. Sandra L. Cadwalader and Vine Deloria, Jr. (Philadelphia: Temple University Press, 1984).
5. U.S. Department of Interior, Indian Claims Commission, *Final Report* (Washington, DC: U.S. Government Printing Office, 1979). For analysis, see Russel Barsh, "Indian Land Claims Policy in the United States," *North Dakota Law Review* 58 (1982). On the notion of ownership reversion, see Felix S. Cohen, "Original Indian Title," *Minnesota Law Review* 32 (1947).
6. The aggregate of reserved landholdings totals some 50 million acres (78,000 square miles), an area equivalent in size to the state of South Dakota. Of this, some 44 million acres are held in trust; Roxanne Dunbar Ortiz, "Sources of Underdevelopment," in *Economic Development on American Indian Reservations*, eds. Roxanne Dunbar Ortiz and Larry Emerson (Albuquerque: Institute for Native American Development, University of New Mexico, 1979), 61; "Native American Statistics—United States," in *Native American Voices: A Reader*, eds. Susan Lobo and Steve Talbot (New York: Longman, 1998), 39.
7. See, for example, Ronald L. Trosper, "Appendix I: Indian Minerals," in *Task Force 7 Final Report: Reservation and Resource Development and Protection*, American Indian Policy Review Commission (Washington, DC: U.S. Government Printing Office, 1977); U.S. Department of Interior, Bureau of Indian Affairs, *Indian Lands Map: Oil, Gas and Minerals on Indian Reservations* (Washington DC: U.S. Government Printing Office, 1978).
8. The 1990 Census tallied 1.96 million American Indians. The count of indigeneous peoples exceeds 2 million when Inuits, Aleuts, and Native Hawaiians are added

in. This population is subdivided into some 500 federally recognized tribes and nations, including 200 Native villages in Alaska; Lobo and Talbot, "Native American Statistics," 38. It should be noted that many analysts believe that the baseline indigenous population has been deliberately undercounted by approximately 60 percent, and that serious estimates of the total number of Native people in the U.S. run as high as 15 million. See Jack D. Forbes, "Undercounting Native Americans: The 1980 Census and Manipulation of Racial Identity in the United States," *Wicazo Sa Review* 6:1 (1990); John Anner, "To the U.S. Census Bureau, Native Americans Are Practically Invisible," *Minority Trendsetter* 4:1 (Winter 1990–1991).

9. U.S. Bureau of the Census, Population Division, Racial Statistics Branch, *A Statistical Profile of the American Indian Population* (Washington, DC: U.S. Government Printing Office, 1988). These data may be usefully compared to those found in U.S. Bureau of the Census, *General Social and Economic Characteristics: United States Summary* (Washington, DC: U.S. Government Printing Office, 1983). For updated information, see *American Indian Digest: Contemporary Demographics of the American Indian* (Phoenix: Thunderbird Enterprises, 1995).

10. Rennard Strickland, *Tonto's Revenge: Reflections on American Indian Culture and Policy* (Albuquerque: University of New Mexico Press, 1997), 53.

11. See, for example, U.S. Department of Health and Human Services, Public Health Service, *Chart Series Book* (Washington, DC: U.S. Government Printing Office, 1988); Karen D. Harvey and Lisa D. Harjo, *Indian Country: A History of Native People in America* (Golden, CO: North American Press, 1994), Appendix L.

12. Strickland, *Tonto's Revenge*, 53.

13. Lobo and Talbot, "Native American Statistics," 40.

14. Strickland, *Tonto's Revenge*, 53.

15. American Indian life expectancy on reservations during the 1990s is thus virtually identical to that of the U.S. general population a century earlier (46.3 years for men; 48.3 for women); Harold Evans, *The American Century* (New York: Alfred A. Knopf, 1998), xx.

16. Under Article II(b) of the United Nations Convention on the Prevention and Punishment of the Crime of Genocide (1948), any policy that intentionally causes "serious bodily or mental harm to members" of a targeted "national, ethnical, racial or religious group, as such" can be considered genocidal. Similarly, under Article II(c), acts or policies "deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part" constitute the crime of genocide; Ian Brownlie, *Basic Documents on Human Rights* (Oxford: Clarendon Press, [3rd ed.] 1992), 31. Questions are habitually raised in some quarters as to whether the impacts of federal policy on American Indians are intentional and deliberate. Let it be said in response that policies generating such catastrophic results over five successive generations cannot be reasonably understood in any other fashion.

17. Marjane Ambler, *Breaking the Iron Bonds: Indian Control of Energy Development* (Lawrence: University Press of Kansas, 1990), 56, 66, 78, 140–41.

18. This is touched upon in connection to the so-called "heirship problem" discussed in Wilcomb E. Washburn, *Red Man's Land/White Man's Law: A Study of the Past and Present Status of the American Indian* (New York: Scribner's, 1971).

19. Lorraine Turner Ruffing, "The Role of Policy in American Indian Mineral Development," in *American Indian Energy Resources and Development*, ed. Roxanne

Dunbar Ortiz (Albuquerque: Institute for Native American Development, University of New Mexico, 1980).

20. Michael Garrity, "The U.S. Colonial Empire Is as Close as the Nearest Reservation," in *Trilateralism: The Trilateral Commission and Elite Planning for Global Development*, ed. Holly Sklar (Boston: South End Press, 1980).

21. It has been argued, persuasively, that without its domination of indigenous land and resources the U.S. military could never have achieved its present posture of global ascendancy; Valerie L. Kuletz, *The Tainted Desert: Environmental and Social Ruin in the American West* (New York: Routledge, 1998).

22. Eduardo Galeano, *The Open Veins of Latin America: Five Centuries of the Pillage of a Continent* (New York: Monthly Review Press, 1973), 12.

23. Anita Parlow, *Cry, Sacred Ground: Big Mountain, USA* (Washington, DC: Christic Institute, 1988).

24. Lobo and Talbot, "Native American Statistics," 40.

25. See generally, A. Rigo Sureda, *The Evolution of the Right to Self-Determination: A Study of United Nations Practice* (Leyden, Netherlands: A. W. Sijhoff, 1973).

26. Brownlie, *Basic Documents*, 29–30.

27. Roxanne Dunbar Ortiz, "Protection of Indian Territories in the United States: Applicability of International Law," in *Irredeemable America: The Indians' Estate and Land Claims*, ed. Imre Sutton (Albuquerque: University of New Mexico Press, 1985), 260. More broadly, see Michla Pomerance, *Self-Determination in Law and Practice* (The Hague: Marinus Nijhoff, 1982).

28. Noteworthy examples are legion. Consider, as illustrations, the situations of the Scots and Welsh on the primary British isle, the Basques in Spain, and the Kurds in Turkey and northern Iraq; Peter Berresford Ellis, *The Celtic Revolution: A Study in Anti-Imperialism* (Talybont, Ceredigion: Y Lolfa, 1985); Robert P. Clark, *Negotiating with ETA: Obstacles to Peace in the Basque Country, 1975–1988* (Reno: University of Nevada Press, 1990); Gerard Chaliand, ed., *People Without a Country: The Kurds and Kurdistan* (London: Zed Press, 1980). For a good overview of legal/political issues, see Gudmunder Alfredsson, "International Law, International Organizations, and Indigenous Peoples," *Journal of International Affairs* 36:1 (1982).

29. Dunbar Ortiz, "Protection," 261. Also see Ronald Fernandez, *Prisoners of Colonialism: The Struggle for Justice in Puerto Rico* (Monroe, ME: Common Courage Press, 1994); Edward Said, *The Question of Palestine*, 2nd ed. (New York: Vintage, 1992).

30. See generally, Haunani-Kay Trask, *From a Native Daughter: Colonialism and Sovereignty in Hawai'i*, 2nd ed. (Honolulu: University of Hawai'i Press, 1999).

31. A presumption underlying articulation of this principle in the charter is, of course, that such territory has been legitimately acquired in the first place. With respect to the U.S., this is patently not the case. Leaving aside issues devolving upon coerced or fraudulent land cessions, the federal government's own Indian Claims Commission concluded in its 1978 final report that the U.S. possessed no basis at all for its assertion of title to and jurisdiction over approximately 35 percent of its claimed gross territoriality; Russel L. Barsh, "Indian Land Claims Policy in the United States," *North Dakota Law Review* 58 (1982).

32. See especially the statement of U.S. State Department official Seth Waxman quoted in Glenn T. Morris, "Further Motion by State Department to Railroad Indigenous Rights," *Fourth World Bulletin* 6 (Summer 1998): 3.

33. Probably the best explication of this concept will be found in Michael Hector, *Internal Colonialism: The Celtic Fringe in British National Politics, 1536–1966* (Berkeley: University of California Press, 1975). For applications to Native North America see, for example, Robert K. Thomas, “Colonialism: Classic and Internal,” *New University Thought* (Winter 1966–1967); Menno Bolt, “Social Correlates of Nationalism: A Study of Native Indian Leaders in a Canadian Internal Colony,” *Comparative Political Studies* 14:2 (Summer 1981); Ward Churchill, “Indigenous Peoples of the U.S.: A Struggle Against Internal Colonialism,” *Black Scholar* 16:1 (Feb. 1985); and Matthew Snipp, “The Changing Political and Economic Status of American Indians: From Captive Nations to Internal Colonies,” *American Journal of Economics and Sociology* 45:2 (Apr. 1986).

34. Jean-Paul Sartre, “On Genocide,” *Ramparts* (Feb. 1968).

35. It should be noted that this prognosis pertains as much to leftist states as it does to those oriented to the right; Walker Connor, *The National Question in Marxist-Leninist Theory and Strategy* (Princeton: Princeton University Press, 1984).

36. Kuletz, *Tainted Desert*, 15–16.

37. A single defense contractor, the Vanadium Corporation of America, delivered all 11,000 tons of uranium consumed by the Manhattan Project; Hosteen Kinlicheel, “An Overview of Uranium and Nuclear Development on Indian Lands in the Southwest,” *Southwest Indigenous Uranium Forum Newsletter*, (Sept. 1993): 5.

38. Gerald D. Nash, *The American West Transformed: The Impact of the Second World War* (Bloomington: Indiana University Press, 1985), 177.

39. Richard Miller, *Under the Cloud: The Decades of Nuclear Testing* (New York: Free Press, 1986), 13.

40. Site selection procedures are reviewed in Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon & Schuster, 1986). Also see Henry DeWolf Smith, *Atomic Energy for Military Uses: The Official Report on the Development of the Atomic Bomb Under Auspices of the United States Government, 1940–1945* (Princeton: Princeton University Press, 1945).

41. As is now well-known, there was even a fear among some participating scientists that the initial nuclear detonation might set off a chain reaction that would engulf the entire planet; Stephane Groueff, *The Manhattan Project* (Boston: Little, Brown, 1967), 19.

42. David Alan Rosenberg, “The U.S. Nuclear Stockpile, 1945–1950,” *Bulletin of Atomic Scientists* (Mar. 1980).

43. The SBA risked little or nothing in funding these smallscale mining startups, since sale of all ore produced was guaranteed at a fixed rate by the AEC; Winona LaDuke, “The History of Uranium Mining: Who Are These Companies and Where Did They Come From?” *Black Hills/Paha Sapa Report* 1:1 (1979).

44. Robert N. Procter, “Censorship of American Uranium Mine Epidemiology in the 1950s,” in *Secret Agents: The Rosenberg Case, McCarthyism and 1950s America*, eds. Marjorie Garber and Rebecca L. Walkowitz (New York: Routledge, 1995), 60. He is citing Robert J. Roscoe, et al., “Lung Cancer Mortality Among Nonsmoking Uranium Miners Exposed to Radon Daughters,” *Journal of the American Medical Association* 262 (1989).

45. On death rates among this almost entirely nonsmoking population, see Michael Garrity, “The Pending Energy Wars: America’s Final Act of Genocide,” *Akwesasne Notes* (Spring 1980). On attempts by Union Carbide representative Bob

Beverly and others to displace blame for the disaster onto cigarettes, see Jack Cox, "Studies Show Radon Guidelines May Be Weak," *Denver Post* (4 Sept. 1979). Also see the quotations from Joseph Wagoner's unpublished paper, "Uranium Mining and Milling: The Human Costs," included in Leslie J. Freeman's *Nuclear Witnesses: Insiders Speak Out* (New York: W. W. Norton, 1982), 142.

46. In the Carpathians, "women are found who have married seven husbands, all of whom this terrible consumption has carried off to a premature death"; Georgius Agricola, *De Re Metallica* (1556; London: Dover, 1912), 214.

47. They also suggested that the death rate from lung cancer would have actually been far higher, were it not that numerous miners died from accidents—cave-ins and the like—before being diagnosed with the disease; F. H. Härting and W. Hesse, "Der Lungens Krebs, die Bergkrankheit in den Schneeberger Gruben," *Vierteljahrsschrift für gerichtliche Medizin* 30 (1879).

48. P. Ludewig and S. Lorensen, "Untersuchung der Grubenluft in den Schneeberger Gruben auf den Gehalt an Radiumemanation," *Zeitschrift für Physik* 22 (1924).

49. A shaft in Saxony with inordinately high radon levels was even known among miners as the *todesschacht* (death mine); Wilhelm C. Hueper, *Occupational Tumors and Allied Diseases* (Springfield, IL: Charles C. Thomas, 1942), 441.

50. Egon Lorenz, "Radioactivity and Lung Cancer: A Critical Review of Lung Cancer in Miners of Schneeberg and Joachimsthal," *Journal of the National Cancer Institute* 5 (1944).

51. Fred W. Stewart, "Occupational and Post-Traumatic Cancer," *Bulletin of the New York Academy of Medicine* 23 (1947). Also see Angela Nugent, "The Power to Define a New Disease: Epidemiological Politics and Radium Poisoning," in *Dying to Work*, eds. Radid Rosner and Gerald Markowitz (Bloomington: Indiana University Press, 1986).

52. Proctor, "Censorship," 62.

53. Merrill Eisenbud, *An Environmental Odyssey* (Seattle: University of Washington Press, 1990), 60.

54. Proctor, "Censorship," 62–63.

55. *Ibid.*, 64.

56. *Ibid.* Hueper was also branded a "security risk," accused alternately of being a "Nazi sympathizer" and a "communist," and prohibited for a time from traveling anywhere west of the Mississippi River.

57. Elof A. Carlson, *Genes, Radiation, and Society* (Ithaca: Cornell University Press, 1981), 356–367.

58. For an overview of Sternglass' findings and suppression for over a decade, see his *Low Level Radiation* (New York: Ballantine, 1972). Also see Freeman, *Nuclear Witnesses*, 50–77.

59. Gofman's AEC funding was revoked and the National Cancer Institute declined to replace it, effectively ending his research career; John W. Gofman and Arthur R. Tamplin, *Population Control Through Nuclear Pollution* (Chicago: Nelson-Hall, 1970); *Poisoned Power: The Case Against Nuclear Power Plants* (Emmaus, PA: Rodale Press, 1971; revised and re-released in 1979 with a new subtitle, *The Case Before and After Three Mile Island*). Also see Freeman, *Nuclear Witnesses*, 78–114.

60. Thomas F. Mancuso, et al., "Radiation Exposures of Hanford Workers Dying of Various Causes," *Health Physics* 33 (1977). William Hines, "Cancer Risk at Nuclear Plant? Government Hushes Up Alarming Study," *Chicago Sun-Times* (13 Nov. 1977).

61. Rosalie Bertell, *No Immediate Danger?* (London: Women's Press, 1985), 83–88. Also see Freeman, *Nuclear Witnesses*, 22–49.

62. Duncan A. Holaday, et al., *Control of Radon and Daughters in Uranium Mines and Calculations of Biologic Effects* (Washington, DC: U.S. Public Health Service, 1957), 4. Overall, see Howard Ball, *Cancer Factories: America's Tragic Quest for Uranium Self-Sufficiency* (Westport, CT: Greenwood, 1993), esp. 49–51.

63. Proctor, "Censorship," 66. Archer is quoted in Ball, *Cancer Factories*, 46, 59–60; the judge is quoted on pages 11–12, 49. Also see the legal analysis offered by George J. Annas in his "The Nuremberg Code in U.S. Courts: Ethics vs. Expediency," in *The Nazi Doctors and the Nuremberg Code*, eds. George J. Annas and Michael A. Grodin (New York: Oxford University Press, 1992), 209–210.

64. On weaponry, see Debra Rosenthal, *At the Heart of the Bomb: The Dangerous Allure of Weapons Work* (Menlo Park, CA: Addison-Wesley, 1990). With regard to reactors, of which there were only thirteen in 1952, all of them government-owned and weapons production-related, see David Dietz, *Atomic Science, Bombs and Power* (New York: Collier, 1962). In 1954, the 1946 Atomic Energy Act was revised to allow private ownership of reactors, all of which were publicly subsidized on a massive scale, an arrangement that brought corporate heavies into the game with a vengeance; Ralph Nader and John Abbott, *The Menace of Nuclear Power* (New York: W. W. Norton, 1977), 275–276. Consequently more than one hundred additional facilities were built over the next thirty years; John L. Berger, *Nuclear Power: The Unviable Option* (Palo Alto, CA: Ramparts Press, 1976); Amory B. Lovins and L. Hunter Lovins, *Brittle Power: Energy Strategy for National Security* (Andover, MA: Brickhouse, 1982).

65. On profitability—thirty-five corporations secured some \$60 billion in federal contracts (over \$200 billion in today's dollars) under the Eisenhower administration alone—see William F. Barber and C. Neale Ronning, *Internal Security and Military Power* (Columbus: Ohio State University Press, 1966), 13. More or less complete immunity from liability was provided under the 1957 Price-Anderson Indemnity Act; Jim Falk, *Global Fission: The Battle Over Nuclear Power* (New York: Oxford University Press, 1982), 78–81.

66. Richard Hoppe, "A Stretch of Desert along Route 66—the Grants Belt—Is Chief Locale for U.S. Uranium," *Engineering and Mining Journal* 79:11 (1978); Sandra E. Bergman, "Uranium Mining on Indian Lands," *Environment* (Sept. 1982).

67. "In the Soviet Union and in other parts of Eastern Europe, prisoners were literally worked to death in mines, apparently as part of a deliberate plan to kill them. Outside North America, the largest single producer of uranium in the world was the German Democratic Republic, where, from 1945 to the end of the 1980s half a million workers produced some two hundred thousand tons of enriched uranium for Soviet bombs and reactors....A somewhat smaller program existed in Czechoslovakia, on the southern slopes of the Erzgebirge. Tens of thousands of political prisoners were forced to work in seventeen uranium 'concentration camps' from the late 1940s through the early 1960s; epidemiological studies were conducted, but the State Security Police barred their publication"; Proctor, "Censorship," 74–75. Also see Patricia Kahn, "A Grisly Archive of Key Cancer Data," *Science* 259 (1993); Robert N. Proctor, "The Oberrothenbach Catastrophe," *Science* 260 (1993).

68. J. B. Sorenson, *Radiation Issues: Government Decision Making and Uranium Expansion in Northern New Mexico* (Albuquerque: San Juan Regional Uranium Study Working Paper No. 14, 1978), 9.

69. Ibid. Also see Harold Tso and Lora Mangum Shields, "Early Navajo Mining Operations: Early Hazards and Recent Innovations," *New Mexico Journal of Science* 12:1 (1980).

70. Jessica S. Pearson, *A Sociological Analysis of the Reduction of Hazardous Radiation in Uranium Mines* (Washington, DC: National Institute for Occupational Safety and Health, 1975).

71. V. E. Archer, J. D. Gillan, and J. K. Wagoner, "Respiratory Disease Mortality Among Uranium Miners," *Annals of the New York Academy of Sciences* 271 (1976); M. J. Samet, et al., "Uranium Mining and Lung Cancer Among Navajo Men," *New England Journal of Medicine* 310 (1984): 1481-1484.

72. Tom Barry, "Bury My Lungs at Red Rock: Uranium Mining Brings New Peril to the Reservation," *The Progressive* (Oct. 1976); Chris Shuey, "The Widows of Red Rock," *Scottsdale Daily Progress Saturday Magazine* (2 June 1979); Reed Madsen, "Cancer Deaths Linked to Uranium Mining," *Deseret News* (4 June 1979); Susan Pearce and Karen Navarro, "The Legacy of Uranium Mining for Nuclear Weapons," *Earth Island Journal* (Summer 1993).

73. Garrity, "Energy Wars," 10.

74. Quoted in Shuey, "Widows," 4; Archer "conservatively" places the lung cancer rate among Navajo miners at 1,000 percent of the national average. Also see Robert O. Pohl, "Health Effects of Radon-222 from Uranium Mining," *Science* (Aug. 1979).

75. Norman Medvin, *The Energy Cartel* (New York: Vintage, 1974); Bruce E. Johansen, "The Great Uranium Rush," *Baltimore Sun* (13 May 1979).

76. Kinlicheel, "Overview," 6.

77. Kuletz, *Tainted Desert*, 31; Phil Reno, *Navajo Resources and Economic Development* (Albuquerque: University of New Mexico Press, 1981), 138.

78. Marjane Ambler, *Breaking the Iron Bonds: Indian Control Over Energy Development* (Lawrence: University Press of Kansas, 1990), 152. For use of the term employed, see Raye C. Ringholz, *Uranium Frenzy: Boom and Bust on the Colorado Plateau* (Albuquerque: University of New Mexico Press, 1989).

79. The vents of one mine run by the Gulf Oil Company at San Mateo, New Mexico, for example, were located so close to the town's school that the State Department of Education ordered closure of the institution—but not the mine—because of the obvious health risks to the children attending it. Meanwhile, the local groundwater was found to have become so contaminated by the corporation's activities that the National Guard was forced to truck in drinking water (at taxpayer expense); Richard O. Clemmer, "The Energy Economy and Pueblo Peoples," in *Native Americans and Energy Development, II*, ed. Joseph Jorgenson (Cambridge: Anthropological Resource Center/Seventh Generation Fund, 1984), 98.

80. Although the entire procedure of dewatering in gross violation of both the Clean Water Act of 1972 (P.L. 92-500; 86 Stat. 816) and the Safe Water Drinking Act of 1974 (P.L. 93-523; 88 Stat. 1660), no charges have ever been brought against Kerr-McGee or any other corporation involved in uranium mining; Ambler, *Iron Bonds*, 175; "Mine Dewatering Operation in New Mexico Seen Violating Arizona Water Standards," *Nuclear Fuel* (1 Mar. 1982); Christopher McCleod, "Kerr-McGee's Last Stand," *Mother Jones* (Dec. 1980).

81. Clemmer, "Energy Economy," 101-102.

82. Lora Mangum Shields and Alan B. Goodman, "Outcome of 13,300 Navajo

Births from 1964–1981 in the Shiprock Uranium Mining Area,” unpublished paper presented at the American Association of Atomic Scientists Symposium, New York, 25 May 1984); Christopher McCleod, “Uranium Mines and Mills May Have Caused Birth Defects among Navajo Indians,” *High Country News* (4 Feb. 1985).

83. “Neoplasms Among Navajo Children” (Window Rock, AZ: Navajo Health Authority, 24 Feb. 1981).

84. Lora Mangum Shields, et al., “Navajo Birth Outcomes in the Shiprock Uranium Mining Area,” *Health Physics* 63:5 (1992).

85. Kuletz, *Tainted Desert*, 36, 40; quoting from U.S. Department of Health and Human Services, Indian Health Services, *Health Hazards Related to Nuclear Resources Development on Indian Land* (Washington DC: 97th Cong. 2d. Sess, U.S. Government Printing Office, 1983).

86. It has been estimated that it would require some 400 million tons of earth—enough to cover the entire District of Columbia forty-three feet deep—to fill in the Jackpile-Paguate complex; Dan Jackson, “Mine Development on U.S. Indian Lands,” *Engineering and Mining Journal* (Jan. 1980). Overall, see U.S. Department of Interior, Bureau of Land Management, *Final Environmental Impact Statement for the Jackpile-Paguate Uranium Mine Reclamation Project*, vol. 2 (Albuquerque: BLM New Mexico Area Office, 1986), A–35.

87. Clemmer, “Energy Economy,” 99.

88. Hope Aldrich, “The Politics of Uranium,” *Santa Fe Reporter* (7 Dec. 1978).

89. U.S. Comptroller General, “EPA Needs to Improve the Navajo Safe Drinking Water Program” (Washington, DC: U.S. Government Printing Office, Sept. 10, 1980), 5.

90. About 450 Lagunas, some three-quarters of the Pueblo’s labor force, as well as 160 Acomas, worked for Anaconda at any given moment. Another 15 to 20 percent of the Lagunas worked for the BIA or other federal agencies. Yet, even under such “full-employment” conditions, the median income on the reservation was only \$2,661 per year (about \$50 per week). This was less than half what a non-Indian open pit miner was earning in an off-reservation locale during the same period; Clemmer, “Energy Economy,” 99; Kuletz, *Tainted Desert*, 35.

91. R. Smith, “Radon Emissions: Open Pit Uranium Mines Said to be Big Contributor,” *Nucleonics Week* (25 May 1978); Linda Taylor, “Uranium Legacy,” *The Workbook* 8:6 (Nov./Dec. 1983).

92. “Manpower Gap in the Uranium Mines,” *Business Week* (1 Nov. 1977). It should be noted that the Labor Department was spending \$2 million per year in tax monies to have Kerr-McGee train Native workers to believe that “if they [did] not smoke, they [would] not develop lung cancer from exposure to radiation in the mines”; Joseph Wagoner, quoted in Denise Tessier, “Uranium Mine Gas Causes Lung Cancer, UNM Group Told,” *Albuquerque Journal* (11 Mar. 1980). There seem to have been no howls of protest from the surgeon general at the peddling of such quasi-official falsehoods. Instead, the country’s “chief doctor” endorsed a battery of studies over the next several years, each of them reinforcing the credibility of such lies by purporting to prove that the “number one cause” of lung cancer even among *nonsmokers* was the inhalation of “secondhand” cigarette smoke, even in the most minute quantities, rather than exposure to comparatively massive doses of military-industrial pollutants.

93. Ambler, *Iron Bonds*, 152.

94. The 1972 price of U.S.-produced uranium was \$6 per pound. By 1979, the figure had risen to \$42, a hugely illegal mark-up which contributed greatly to the accrual of U.S. taxpayer-provided corporate superprofits during the final years of the AEC's ore-buying program (as well as the almost instantaneous bust of the domestic market when the program was phased out); David Burnham, "Gulf Aides Admit Cartel Increased Price of Uranium," *New York Times* (17 June 1977). Shortly after its closure in 1982, Anaconda's Jackpile-Paguete complex was replaced as the world's largest open pit uranium mine by Rio Tinto Zinc's Rossing Mine, opened in 1976 in Namibia. Uranium from this de facto South African colony, comprising about one-sixth of the "Free World" supply, was sold not only at a rate of less than \$10 per pound to the U.S. and other NATO countries—a factor which drove the highly-inflated price of U.S.-mined yellowcake back down to \$15, thereby "busting" the profitability of production—but also to Israel, supplying that country's secret production of nuclear weapons. It was also used to underpin South Africa's own illicit nuclear weapons development program; Richard Leonard, *South Africa at War: White Power and Crisis in Southern Africa* (Westport, CT: Lawrence Hill, 1983), 60–69. On Australian uranium mining, and the resistance to it spearheaded by aboriginal peoples, see Falk, *Global Fission*, 256–284. On northern Saskatchewan, see Miles Goldstick, *Wollaston: People Resisting Genocide* (Montréal: Black Rose Books, 1987). Overall, see A. D. Owen, "The World Uranium Industry," *Raw Materials Report* 2:1 (Spring 1983).

95. W. D. Armstrong, *A Report on Mineral Revenues and the Tribal Economy* (Window Rock, AZ: Navajo Office of Mineral Development, June 1976); Joseph G. Jorgenson, "The Political Economy of the Native American Energy Business," in his *Native Americans and Energy Development, II*, 9–20.

96. For a good summary of such practices, see Richard Nafziger, "Uranium Profits and Perils," in *Red Paper*, ed. LaDonna Harris (Albuquerque: Americans for Indian Opportunity, 1976). Also see Molly Ivins, "Uranium Mines in West Leave Deadly Legacy," *New York Times* (20 May 1979); Bill Freudenberg, "Addictive Economies: Extractive Industries and Vulnerable Localities in a Changing World Economy," *Rural Sociology* 57:3 (Fall 1992).

97. The federal program to undermine the Navajo self-sufficiency economy devolved upon wholesale impoundment of livestock during the 1930s and 1940s; George A. Boyce, "*When the Navajos Had Too Many Sheep: The 1940s*" (San Francisco: Indian Historian Press, 1974); Ruth Roessel, ed., *Navajo Livestock Reduction* (Chinle, AZ: Navajo Community College Press, 1975). At Laguna, which had enjoyed an agricultural economy since time immemorial, Anaconda's massive stripmining and related activities—which yielded an estimated \$600 million in corporate revenues over thirty years—obliterated much of the arable land base and irradiated most of the rest; Clemmer, "Energy Economy," 97–98. More broadly, see Nancy J. Owens, "The Effects of Reservation Bordertowns and Energy Exploitation on American Indian Economic Development," *Research in Economic Anthropology* 2 (1979).

98. Kinlicheel, "Overview," 6.

99. Laguna has been described as the "single most radioactively-contaminated area in North America outside of the military reservations in Nevada where nuclear bombs are tested"; Winona LaDuke, interview on radio station KGNU, Boulder, CO (15 Apr. 1986). Nevertheless, the 1986 "hearings for the environmental impact draft statement for the Jackpile-Paguete mine's reclamation project began with no less than ten Ph.D.'s

and other 'technical' experts in a variety of scientific disciplines, including a mining engineer, a plant ecologist, a radiation ecologist, an expert in biomedicine, and others. All testified in obfuscating language that America's largest uranium mine could be safely unreclaimed. All were under contract to the Anaconda Corporation"; Marjane Ambler, "Lagunas Face Fifth Delay in Uranium Cleanup," *Navajo Times* (5 Feb. 1986).

100. Quoted in Tom Barry, "The Deaths Still Go On: New Agencies Ignored Uranium Danger," *Navajo Times* (31 Aug. 1978).

101. Freeman, *Nuclear Witnesses*, 140.

102. "Uranium-bearing tailings are constantly decaying into more stable elements and therefore emit radiation, as do particles of dust that blow in the wind and truck travel on dirt roads"; Clemmer, "Energy Economy," 102. Also see David Densmore Comey, "The Legacy of Uranium Tailings," *Bulletin of Atomic Scientists* (Sept. 1975).

103. Hoppe, "Grants Belt"; LaDuke, "History of Uranium Mining." In instances where milling was done in areas populated by "mainstream citizens," it was sometimes disguised as something else. For example, the AEC hid a milling operation, beginning in 1951, in Fernald, Ohio, near Cincinnati, behind the front that it was a "pet food factory." The ruse worked for thirty-seven years; Helen Caldicott, *If You Love This Planet: A Plan to Heal the Earth* (New York: W. W. Norton, 1992), 90.

104. Lynn A. Robbins, "Energy Development and the Navajo Nation: An Update," in Jorgenson, *Energy Development*, 121.

105. Simon J. Ortiz, "Our Homeland: A National Sacrifice Area," in *Woven Stone* (Tucson: University of Arizona Press, 1992), 356-358.

106. Robbins, "Energy Development," 121. It should also be noted that the mill's tailings pile is located only about sixty feet from the San Juan River, Shiprock's only source of surface water, and less than a mile from a daycare center, the public schools, and the local business district. The closest residence is less than one hundred yards away; Tso and Shields, "Early Navajo Mining."

107. In 1979, several former mill workers with terminal lung cancer joined with eleven similarly afflicted Red Rock miners and the families of fifteen who had already died in suing the AEC and Kerr-McGee for what had been done to them; "Claims Filed for Red Rock Miners," *Navajo Times* (26 July 1979); Marjane Ambler, "Uranium Millworkers Seek Compensation," *APF Reporter* (Sept. 1980).

108. Luther J. Carter, "Uranium Mill Tailings: Congress Addresses a Long Neglected Problem," *Science* (13 Oct. 1978).

109. See the map by Janet Steele entitled "Uranium Development in the San Juan Basin," in Freeman, *Nuclear Witnesses*, 139.

110. For example, the Sohio-Reserve mill at Cebolleta, a mile from the Laguna boundary, processed about 1,500 tons of ore per day during the late 1970s. Its tailings pond covers fifty acres, and the adjoining pile reached a record 350 feet; Clemmer, "Energy Economy," 98. Also see Hope Aldrich, "Problems Pile Up at the Uranium Mills," *Santa Fe Reporter* (13 Nov. 1980).

111. Clemmer, "Energy Economy," 97-98.

112. Report by Johnny Sanders (head of Environmental Health Services Branch of the Indian Health Service), T. J. Hardwood (IHS Albuquerque area director), and Mala L. Beard (the district sanitarian) to Laguna Pueblo Governor Floyd Corea, 11 August 1978; copy on file with the Southwest Research and Information Center, Albuquerque. To be fair about it, other corporations made similar use of tailings in

several backwater non-Indian communities on the Colorado Plateau during this period. These included Moab, Utah, and both Grand Junction and Durango, Colorado.

113. *Jackpile-Paguete Uranium Mine Reclamation Project*, A, 62–63.

114. The quantitative release of radioactive substances during the Church Rock spill was several times that of the much more publicized partial meltdown of a reactor at Three Mile Island, near Harrisburg, Pennsylvania, a few months earlier (28 Mar. 1979); Ambler, *Iron Bonds*, 175–176; Mark Alan Pinsky, “New Mexico Spill Ruins a River: The Worst Radiation Accident in History Gets Little Attention,” *Critical Mass* (Dec. 1979).

115. In the immediate aftermath, the Río Puerco was testing at over 100,000 picocuries of radioactivity per liter. The maximum safe limit is fifteen picocuries; Janet Siskind, “A Beautiful River That Turned Sour,” *Mine Talk* (Summer/Fall 1982); Steve Hirschman, “Rebottling the Nuclear Genie,” *High Country News* (19 Jan. 1987). Although the July 16 “incident” was the seventh spill from this single dam in five years, United Nuclear had already applied for, and would receive, federal permission to resume use of its tailings pond within two months; Editors, “The Native American Connection,” *Up Against the Wall Street Journal* (29 Oct. 1979).

116. Report of the New Mexico Environmental Improvement Division (EID), dated 9 Sept. 1979, on file with the Southwest Research and Information Center, Albuquerque.

117. J. W. Schomish, “EID Lifts Ban on Eating Church Rock Cattle,” *Gallup Independent* (22 May 1980).

118. One company spokesperson reportedly informed community representatives that, “This is not a free lunch”; quoted in Dan Liefgree, “Church Rock Chapter Upset at UNC,” *Navajo Times* (8 May 1980). Such behavior is neither unique nor restricted to corporations. When, in 1979, it was discovered that well water in the Red Shirt Table area of the Pine Ridge Reservation in South Dakota was irradiated at a level fourteen times the EPA maximum—apparently as the result of the 3.5 million tons of tailings produced by an isolated AEC mining/milling operation begun in 1954 at Igloo, a nearby army ordnance depot—Tribal President Stanley Looking Elk requested \$200,000 in BIA emergency funding to supply potable water to local Oglala Lakota residents. The bureau approved Looking Elk’s request in the amount of \$175,000, but stipulated that the water be used only for cattle; Madonna Gilbert, “Radioactive Water Contamination on the Redshirt Table, Pine Ridge Reservation, South Dakota” (Porcupine, SD: WARN Reports, Mar. 1980); Women of All Red Nations, “Radiation: Dangerous to Pine Ridge Women” *Akwesasne Notes* (Spring 1980); Patricia J. Winthrop and J. Rothblat, “Radiation Pollution in the Environment,” *Bulletin of Atomic Scientists* (Sept. 1981): esp. 18.

119. On the cracks, see Chris Huey, “The Rio Puerco River: Where Did the Water Go?” *The Workbook* 11 (1988). On the settlement, see Frank Pitman, “Navajos-UNC Settle Tailings Spill Lawsuits,” *Navajo Times* (22 Apr. 1985). On state facilitation, which took the form of discounting the extent and degree of damage done, see “EID Finds that Church Rock Dam Break had Little or No Effect on Residents,” *Nuclear Fuel* (14 Mar. 1983). The questions, of course, are why, if there was no effect, at least one Navajo woman and an untold number of sheep sickened and died in 1979 after wading in the Río Puerco, why several other people died under similar circumstances during the next few years, and why the EID itself prohibited use of the river as a drinking water

source until 1990, more than a decade after the spill; Loretta Schwarz, "Uranium Deaths at Crown Point," *Ms. Magazine* (Oct. 1979); Molly Ivins, "100 Navajo Families Sue on Radioactive Waste Spill," *New York Times* (15 Aug. 1980).

120. D. R. Dreeson, "Uranium Mill Tailings: Environmental Implications," *Los Alamos Scientific Laboratory Mini-Report* (Feb. 1978).

121. Thadías Box, et al., *Rehabilitation Potential for Western Coal Lands* (Cambridge: Ballinger, 1974).

122. On the extent of Peabody's coal-stripping operations on Navajo at the time of the NAS study, see Alvin M. Josephy, Jr., "The Murder of the Southwest," *Audubon Magazine* (July 1971).

123. Although little uranium mining or milling had occurred in this region (with the exception of that at Igloo, which ended in 1972; see note 118, above), it contains substantial deposits of uranium, low-sulfur coal, and a wealth of other minerals. As was noted by one contemporaneous observer, overall, "the plans for the hills are staggering. They include a giant energy park featuring more than a score of 10,000 megawatt coal-fired plants, a dozen nuclear reactors, huge coal slurry pipelines designed to use millions of gallons of water to move crushed coal thousands of miles, and at least fourteen major uranium mines"; Harvey Wasserman, "The Sioux's Last Fight for the Black Hills," *Rocky Mountain News* (24 Aug. 1980). Also see Amelia Irvin, "Energy Development and the Effects of Mining on the Lakota Nation," *Journal of Ethnic Studies* 10:2 (Spring 1982).

124. The Nixon administration reputedly used this vernacular during discussions from 1972 onward. For the first known official print articulation, see U.S. Department of Energy, Federal Energy Administration, Office of Strategic Analysis, *Project Independence: A Summary* (Washington, DC: U.S. Government Printing Office, 1974).

125. Nick Meinhart, "The Four Corners Today, the Black Hills Tomorrow?" *Black Hills/Paha Sapa Report* (Aug. 1979).

126. Means' statements were made during a speech delivered at the Black Hills International Survival Gathering, near Rapid City, South Dakota, 12 June 1980; included in Ward Churchill, *Marxism and Native Americans* (Boston: South End Press, 1983), 25.

127. All told, the official count is "approximately 1,000 significant nuclear waste sites" on Navajo alone; U.S. Department of Interior, Environmental Protection Agency, *Potential Health and Environmental Hazards of Nuclear Mine Wastes* (Washington, DC: U.S. Government Printing Office, 1983), 1–23. During the National Citizens' Hearings on Radiation Victims in 1980, former uranium miner Kee Begay, dying of lung cancer, testified that he had "lost a son, in 1961. He was one of the many children that used to play in the uranium piles during those years. We had a lot of uranium piles near our homes—just about fifty or a hundred feet away or so—a lot of tailings. Can you imagine? Kids go out and play on those piles!"; Freeman, *Nuclear Witnesses*, 143–144.

128. While Grants Belt mining and milling accounted for all but about 10 percent of U.S. uranium production between 1941 and 1982, small amounts were done elsewhere in Indian country. The AEC facility at Igloo has already been mentioned (see note above). Other examples include the Dawn Mining Company's mine and mill which operated at Blue Creek, on the Spokane Reservation in Washington State, from 1964 to 1982, and Western Nuclear's Sherwood facility in the same locale, which oper-

ated briefly, from 1978 to 1982. The Blue Creek site in particular has generated contamination of local groundwater at levels forty times the EPA's maximum permissible limit for human consumption (4,000 times the area's natural level); Ambler, *Iron Bonds*, 176. Another illustration is the Susquehannah-Western River ton mill site on the Wind River Reservation in Wyoming. Although it ceased operation in 1967, the corporations followed the usual practice of simply walking off and leaving the results for the local Indians, in this case Shoshones and Arapahos, to deal with; Marjane Ambler, "Wyoming to Study Tailings Issue," *Denver Post* (5 Feb. 1984).

129. See generally, Anna Gyorgy, et al., *No Nukes: Everybody's Guide to Nuclear Power* (Boston: South End Press, 1979), 49.

130. Suzanne Ruta, "Fear and Silence at Los Alamos," *The Nation* (11 Jan. 1993).

131. Concerned Citizens for Nuclear Safety, "LANL [Los Alamos National Laboratory] deliberately, secretly released radiation on at least three separate occasions in 1950," *The Nuclear Reactor* 3:1 (Feb.-Mar. 1994).

132. It appears that legal prohibitions against such disposal of nuclear wastes are being circumvented by shipping materials from other DoE facilities to Los Alamos, where they can be secretly burned in the lab's controlled air incinerator. Currently, it is estimated that 1,236 cubic feet of plutonium-contaminated substances are being dispersed in this way each year; Mary Risely, "LANCL Gropes to Find a New Way," *Enchanted Times* (Fall/Winter 1993): 6.

133. *Ibid.*

134. Since 1980, "physicians at the Santa Fe Indian Hospital have noticed an unusual number of thyroid cancer cases [associated with the atmospheric release of radioactive iodides] at the Santa Clara Pueblo, just north of Los Alamos"; Kuletz, *Tainted Desert*, 53. The rate of thyroid cancer at Santa Clara is triple the national average.

135. *Ibid.*

136. Risely, "New Way."

137. Kuletz, *Tainted Desert*, 53.

138. The Chernobyl explosion released, at a minimum, 185 million curies of atmospheric radiation during the first ten days. It has claimed 125,000 dead during the first decade, a rate which is not expected to peak for another ten years; Blanche Wiesen Cook, "Cold War Fallout," *The Nation* (9 Dec. 1996): 32.

139. Elouise Schumacher, "440 Billion Gallons: Hanford wastes could fill 900 King Domes," *Seattle Times*, (13 Apr. 1991).

140. There were at least eleven tank failures at Hanford by 1970. Another, reputedly the worst, was discovered on June 8, 1973; Kenneth B. Noble, "The U.S. for Decades Let Uranium Leak at Weapons Plant," *New York Times* (15 Oct. 1988).

141. Concerning shellfish as an indicator of the extent the Columbia River has been contaminated, it should be noted that a Hanford worker who dined on oysters harvested near the river's mouth in 1962 reportedly ingested sufficient radioactivity in the process that he triggered the plant's radiation alarm upon returning to work; Caldicott, *Planet*, 89.

142. *Ibid.* Also see Susan Wyndham, "Death in the Air," *Australian Magazine* (29-30 Sept. 1990); Matthew L. Wald, "Wider Peril Seen in Nuclear Waste from Bomb Making," *New York Times* (28 Mar. 1991).

143. Larry Lang, "Missing Hanford Documents Probed by Energy Department," *Seattle Post-Intelligencer* (20 Sept. 1991).

144. Caldicott, *Planet*, 90.

145. The U.S. detonated a total of 106 nuclear devices in the Pacific between 1946 and 1958, 101 of them after 1950. Two atolls in the Marshall Islands, Bikini and Eniwetok—occupied by the U.S. in 1943—were subjected to sixty-six blasts of up to fifteen megatons each, beginning in 1946. Among the tests conducted on Eniwetok was that of the first hydrogen bomb in 1952. The local populations were forcibly relocated to Kili Island, where they were held against their will until 1968. The Bikinians were then told, falsely, that it was safe to return to their homes, which were saturated with the radiation of twenty-three bombs. A decade later, the Enewetakans were also encouraged to return to their homes, despite the fact that a 1979 General Accounting Office study concluded they would be exposed to dangerously high radiation levels accruing from the forty-three tests conducted there prior to 1958; Giff Johnson, “Nuclear Legacy: Islands Laid Waste,” *Oceans* (Jan. 1980). The Bikinians were removed from their island again in 1978—at about the same time the people of Enewetak were going home—because cancers, birth defects, and other maladies had become endemic. It is likely that they had been returned in the first place to serve as a test group upon which the effects of plutonium ingestion could be observed; Giff Johnson, “Bikinians Facing Radiation Horrors Once More,” *Micronesia Support Committee Bulletin* (May–June 1978). Quite probably, the Enewetakans were slated to serve the same purpose.

146. David Loomis, *Combat Zoning: Military Land-Use Planning in Nevada* (Las Vegas: University of Nevada Press, 1994), 10; citing Michael Skinner, *Red Flag* (Novato, CA: Presidio Press), 52. For a more comprehensive overview of how all this evolved, see Gerald D. Nash, *The American West Transformed: The Impact of the Second World War* (Bloomington: University of Indiana Press, 1985).

147. The area was permanently reserved by the Shoshones in the 1863 Treaty of Ruby Valley; Dagmar Thorpe, *Newe Segobia: The Western Shoshone People* (Lee, NV: Western Shoshone Sacred Lands Association, 1982). Also see the map in Kuletz, *Tainted Desert*, 68.

148. On acreage, see Loomis, *Combat Zoning*, 31. With respect to the number of test detonations—five of which actually occurred north of the test site, on the Nellis bombing range—the official count was 702 U.S. and twenty-three British as of early 1992; U.S. Department of Energy, *Announced United States Nuclear Tests July 1945 through December 1991* (Washington, DC: U.S. Government Printing Office, 1992). On 8 December 1992, however, the *New York Times* reported that there had been 204 unannounced U.S. tests conducted at the Nevada facility between 1952 and 1990; Anthony Robbins, Arjun Makhijani, and Katherine Yih, *Radioactive Heaven and Earth: The Health and Environmental Effects of Nuclear Weapons Testing In, On, and Above the Earth* (New York/London: Apex Press/Zed Books, 1991), 91. Adding the six tests approved by the Clinton administration during 1992 yields a total of 953 nuclear bombings of Western Shoshone territory by that point.

149. See subsection entitled “The Most Bombed Nation in the World,” in Bernard Neitschmann and William Le Bon, “Nuclear Weapons States and Fourth World Nations,” *Cultural Survival Quarterly* 11:4 (1987): 5–7.

150. Howard Ball, *Justice Downwind: America’s Atomic Testing Program in the 1950s* (New York: Oxford University Press), 85. Also see Richard Miller, *Under the Cloud: The Decades of Nuclear Testing* (New York: Free Press, 1986).

151. For estimates of atmospheric releases, see Carole Gallegher, *America Ground Zero: The Secret Nuclear War* (New York: Random House, 1993).

152. Kuletz, *Tainted Desert*, 72.

153. U.S. Congress, Office of Technology Assessment, *Complex Cleanup: The Environmental Legacy of Nuclear Weapons Production* (Washington, DC: U.S. Government Printing Office, 1991), 158–159. The half-life of several of these materials—e.g., the plutoniums—is estimated as being a quarter-million years.

154. “Report: Fed Snub Tribe’s Radiation Exposure,” *Reno Gazette-Journal* (7 June 1994). On estimate of deaths, see James W. Hulse, *Forty Years in the Wilderness* (Reno: University of Nevada Press, 1986), 61.

155. During a 1956 effort by Nevada residents to enjoin further atmospheric detonations, a battery of the AEC’s selected “scientific experts” perjured themselves by uniformly insisting, contrary to all logic and the results of their own classified studies, that nuclear weapons testing entailed “no public health hazard.” Although the AEC later conceded that its witnesses had systematically lied under oath, no one was ever prosecuted in the matter; Kuletz, *Tainted Desert*, 73. Also see Bill Curry, “A-Test Officials Feared Outcry After Health Study,” *Washington Post* (14 Apr. 1979); Randall Smith, “Charge Ike Mislead Public on N-Tests,” *New York Daily News* (20 Apr. 1979).

156. Kuletz, *Tainted Desert*, 69–70.

157. China Lake, which encompasses 38 percent of the Navy’s total land holdings, supports about 1,000 military personnel and over 5,000 civilian scientists, engineers, and technicians in more than 1,100 buildings on an annual budget of nearly \$1 billion; *ibid.*, 62–63

158. China Lake commands some 20,000 square miles of air space, as do each of the other three facilities. Quite literally, the sky over the entire Mojave has been appropriated by the military; Loomis, *Combat Zoning*, 70.

159. U.S. Navy, *Naval Weapons Center Silver Anniversary* (China Lake Naval Weapons Center: Technical Information Dept. Publishing Division, Oct. 1968).

160. One such group of Timbisha Shoshones have more or less established themselves as “squatters” in a Death Valley visitor’s center. Others are clustered to the north and west, in the Owens Valley, the Tehachapi Mountains, and the Lake Isabella area. One of their areas of particularly sacred geography, the Coso Range, is now “officially called the Military Target Range, [and] constitutes some seventy square miles of mountainous area...with various targets—bridges, tunnels, vehicles, SAM sites—emplaced in a natural forested environment for tactics development and pilot training under realistic conditions”; R. E. Kistler and R. M. Glen, *Notable Achievements of the Naval Weapons Center* (China Lake Naval Weapons Center: Technical Information Dept. Publishing Division, 1990), 17. For further details, see William Thomas, *Scorched Earth: The Military Assault on the Environment* (Philadelphia: New Society, 1995).

161. Aside from the 1971 megablast—dubbed Cannikan—it was about 350 times as powerful as the Hiroshima bomb, but carrying only one-third the force of the Bravo device exploded aboveground on Bikini in 1954—the other two Amchitka detonations were Long Shot in 1965 (eighty kilotons) and Milrow in 1969 (one megaton); Robbins, Makhijani, and Yih, *Radioactive Heaven and Earth*, 66.

162. David Hulen, “After the Bombs: Questions linger about Amchitka nuclear tests,” *Anchorage Daily News* (7 Feb. 1994).

163. Kristen Ostling and Joanna Miller, *Taking Stock: The Impact of Militarism on the Environment* (New York: Science for Peace, 1992).

164. Construction of the MX system—an entirely offensive weapon, which was, of

course, dubbed the Peacekeeper—promised to generate an estimated half-billion in profits for Weinberger's parent corporation; Tristan Coffin, "The MX: America's \$100 Billion 'Edsel,'" *Washington Spectator* (15 Oct. 1980). It would also have eliminated the remaining habitable land base of the Shoshones; Martha C. Knack, "MX Issues for Native American Communities," in Francis Hartigan, ed., *MX in Nevada: A Humanistic Perspective* (Reno: Nevada Humanities Press, 1980). Another fine study is to be found in Rebecca Solnit's *Savage Dreams: A Journey Into the Hidden Wars of the American West* (San Francisco: Sierra Club, 1994).

165. Southwestern Arizona also includes another pair of huge military complexes, the half-million acre Yuma Proving Grounds and adjoining million-acre Luke Air Force Base; see generally, Ostling and Miller, *Taking Stock*. The three Native peoples in question are thus completely encircled by these facilities to their south, Southern California's constellation of bases and test ranges to their west, the Nevada Test Site and related areas to their north, and the Navajo sacrifice zone to their east.

166. The latter include the 600,000-acre Hill Air Force Training Range, about thirty miles north of the somewhat larger Wendover Range. Adjoining Wendover to the south, is the equally-sized Deseret Test Center (containing the Tooele Arms Depot), below which is a much smaller parcel, the Fish Springs Nuclear Weapons Range. Abutting both Wendover and Deseret to the east is another equally-sized compound, the Dugway Proving Grounds. No public access is allowed on *any* of these approximately 2,750,000 acres, the combined controlled air space of which exceeds 20,000 square miles; see generally, Ostling and Miller, *Taking Stock*.

167. Karl Grossman, *Cover Up: What You Are Not Supposed to Know About Nuclear Power* (New York: Permanent Press, 1980), 13.

168. P. Z. Grossman and E. S. Cassedy, "Cost Benefit Analysis of Nuclear Waste Disposal," *Science, Technology and Human Values* 10:4 (1985).

169. As Helen Caldicott explains, "When exposed to air, plutonium ignites, forming very fine particles—like talcum powder—that are completely invisible. A single one of these particles could give you lung cancer. Hypothetically, if you could take one pound of plutonium and could put a speck of it in the lungs of every human being [she estimates a single microgram is sufficient], you would kill every man, woman, and child on earth—not immediately, but later, from lung cancer"; Freeman, *Nuclear Witnesses*, 294. Also see David Burnham, "Rise in Cancer Death Rate Tied in Study to Plutonium," *New York Times* (6 June 1976).

170. Current planning now entails a "force reduction" in the number of such weapons to 3,500 by the year 2003; Charles Pope, "Nuclear Arms Cleanup Bill: A Tidy \$230 Billion," *San Jose Mercury News* (4 Apr. 1995).

171. Kuletz, *Tainted Desert*, 82; quoting William J. Broad, "The Plutonium Predicament," *New York Times* (2 May 1995).

172. Pope, "Arms Cleanup."

173. U.S. Department of Energy, Office of Environmental Management, *Estimating the Cold War Mortgage: The 1995 Baseline Environmental Management Report* (Washington, DC: DOE/EM-0232, Mar. 1995); *Closing the Circle of the Closing of the Atom: The Environmental Legacy of Nuclear Weapons Production in the United States and What the Department of Energy is Doing About It* (Washington, DC: DOE/EM-0228, Jan. 1995).

174. U.S. Department of Energy, Office of Environmental Management, *Environmental Management 1995* (Washington, DC: DOE/EM-0228, Feb. 1995).

175. For analysis of the defects in this proposition, see Arjun Makhijana and Scott Saleska, *High-Level Dollars, Low-Level Sense: A Critique of Present Policy for the Management of Long-Lived Radioactive Wastes and Discussion of an Alternative Approach* (Takoma Park, MD: Institute for Energy and Environmental Research, 1992).

176. The Groundwork Collective, "The Illusion of Cleanup: A Case Study at Hanford," *Groundwork* 4 (Mar. 1994): 14. For the record, the classification scheme involved here, which is incorporated into the 1982 Nuclear Waste Policy Act (P.L. 97-425; 96 Stat. 2201), is problematic. The term "high-level wastes" pertains to spent fuel from nuclear power plants subject to reprocessing for extraction of plutonium and uranium-235. "Transuranic wastes" include substances like plutonium, neptunium, and americium, "bred" from uranium-238. "Low-level wastes" include materials—for instance, worn out reactor parts—contaminated by exposure to high-level or transuranic substances. The classifications don't necessarily correspond to the degree of threat posed by a given material, only to the nature of the process by which it was produced; Concerned Citizens for Nuclear Safety, *The Nuclear Reactor* (Early Spring 1995).

177. Although tailings cleanup is mandated by the Uranium Mill Tailings Radiation Control Act of 1978, the program has been so chronically underfunded that it didn't really get started at all for eight years. When it did, its efforts consisted largely of moving tailings piles from particularly sensitive locations—such as downtown Edgemont, South Dakota, where the AEC had dumped about 3.5 million tons along the banks of the Cottonwood Creek, a quarter-mile upstream from the Cheyenne River—and relocating them to some preferable spot a few miles away, where they could be fenced-off for safety reasons; Ambler, *Iron Bonds*, 178–190. Arguably, the dispersal involved in such procedures worsens rather than alleviates the problem. The plain fact is that nobody has a clue what to do with this body of carcinogenic material which, by the mid-1970s, was already large enough to "cover a four lane highway one foot deep from coast to coast"; Jeff Cox, "Nuclear Waste Recycling," *Environmental Action Bulletin* 29 (May 1976).

178. Nicholas Lenssen, *Nuclear Waste: The Problem that Won't Go Away* (Washington, DC: Worldwatch Institute, 1991), 34–35.

179. Becky O'Guin, "DOE: Nation to Burn and Vitrify Plutonium Stores," *Colorado Daily* (10 Dec. 1996).

180. The need for permanent repositories was formally enunciated for the first time in the Nuclear Waste Policy Act of 1982 (NWPA); the two-part scheme, authorizing establishment of MRS facilities as well as repositories, was included in the 1987 revision of NWPA; U.S. Department of Energy, Monitored Retrievable Storage Commission, "Nuclear Waste: Is There A Need For Federal Interim Storage?" in *Report of the Monitored Retrievable Storage Commission* (Washington, DC: U.S. Government Printing Office, 1989); Gerald Jacob, *Site Unseen: The Politics of Siting a Nuclear Repository* (Pittsburg: University of Pittsburg Press, 1990).

181. Valerie Taliman, "Nine tribes look at storage: Signs point to nuclear dump on Native land," *Smoke Signals* (Aug. 1993).

182. "Plutonium is so hazardous that if you...manage to contain the [amounts projected to exist by the turn of the century] 99.99 percent perfectly, it would still cause somewhere between 140,000 and 500,000 extra lung-cancer fatalities each year.... The point is, if you lose a little bit of it—a terribly little bit—you're going to contaminate

the earth, and people are going to suffer for thousands of generations"; quoted in Freeman, *Nuclear Witnesses*, 108, 111.

183. In 1995, the few residents of Lincoln County, Nevada attempted to negotiate a hefty fee for themselves in exchange for accepting an MRS. The state government quickly quashed the initiative; Kuletz, *Tainted Desert*, 106.

184. Grace Thorpe, "Radioactive Racism? Native Americans and the Nuclear Waste Legacy," *The Circle* (Apr. 1995).

185. Taliman, "Nine tribes."

186. On the NCAI grant, see Randel D. Hansen, "Mescalero Apache: Nuclear Waste and the Privatization of Genocide," *The Circle* (Aug. 1994). On the CERT funding, see Winona LaDuke, "Native Environmentalism," *Earth Island Journal* (Summer 1993). CERT, created in the late 1970s by then Navajo Tribal Chairman Peter McDonald and federal lobbyist LaDonna Harris, has long been a major problem for those pursuing indigenous sovereignty; Philip S. Deloria, "CERT: It's Time for an Evaluation," *American Indian Law Newsletter* (Sept./Oct. 1982). Also see Geoffrey O'Gara, "Canny CERT Gets Money, Respect, Problems," *High Country News* (14 Dec. 1979); Ken Peres and Fran Swan, "The New Indian Elite: Bureaucratic Entrepreneurs," *Akwesasne Notes* (Spring 1980); Winona LaDuke, "CERT: An Outsider's View In," *Akwesasne Notes* (Summer 1980).

187. Ambler, *Iron Bonds*, 115, 234.

188. The lease, which will soon expire, generates about 90 percent of the reservation's revenues. Without the MRS facility, the Goshutes would not only continue to suffer a high degree of contamination, but be totally without income as well; Kuletz, *Tainted Desert*, 110.

189. Quoted in Randel D. Hanson, "Nuclear Agreement Continues U.S. Policy of Dumping on Goshutes," *The Circle* (Oct. 1995).

190. Unidentified Mescalero, quoted in Winifred E. Frick, "Native Americans Approve Nuclear Waste Dump on Tribal Lands," *Santa Cruz on a Hill Press* (16 Mar. 1995).

191. Quoted in *ibid.*

192. Rufina Laws, cited in Kuletz, *Tainted Desert*, 108. Chino died in November 1998.

193. Such a sense of emotional and spiritual malaise is hardly unique to Indians, albeit it may manifest itself especially strongly among groups like the Mescaleros, who are placed in extremis; see Joanna Rogers Macy, *Despair and Personal Power in the Nuclear Age* (Baltimore: New Society, 1983).

194. This, of course, leaves unaddressed the question of transuranic military waste—about 250,000 cubic meters of it—produced before 1970. Most of it is buried in shallow trenches at the Nevada Test Site and other locations, and is "difficult to retrieve" since the earth around it is now irradiated to an unknown depth. Present planning has gone no further than to leave it where it is, leaching into the environment at a steady rate; Rosenthal, *Heart of the Bomb*, 195.

195. Kuletz, *Tainted Desert*, 98; citing Concerned Citizens for Nuclear Safety, "What is WIPP?" *The Radioactive Rag* (Winter/Spring 1992).

196. National Academy of Sciences, Division of Earth Science, Committee on Waste Disposal, *The Disposal of Radioactive Waste on Land* (Washington, DC: NAS-NRC Pub. 519, 1957); Scientists' Review Panel on the WIPP, *Evaluation of the Waste Isolation Pilot Plant (WIPP) as a Water Saturated Nuclear Waste Repository* (Albuquerque: Concerned Citizens for Nuclear Safety, Jan. 1988).

197. "Scientists Fear Atomic Explosion of Buried Waste," *New York Times* (5 Mar. 1995).

198. About 10 percent of Yucca Mountain's capacity is earmarked for military wastes. As to civilian wastes, it will have been outstripped by the output of the country's 128 functioning commercial reactors before it is completed. Hence, a third repository is already necessary; Kuletz., *Tainted Desert*, 102.

199. Jacob, *Site Unseen*, 138.

200. The Low-Level Radioactive Waste Policy Act of 1980 makes the states responsible for the disposal of such materials, even if they've been federally or militarily produced (as they almost invariably are). Former California Governor Pete Wilson apparently opted to "assume the burden" of all forty-nine of his cohorts—on a fee-for-service basis—by dumping the aggregate contamination on a handful of Indians in a remote and unnoticed corner of his vast domain; Philip M. Klasky, "The Eagle's Eye View of Ward Valley: Environmentalists and Native American Tribes Fight Proposed Waste Dump in the Mojave Desert," *Wild Earth* (Spring 1994).

201. The plan is to inter the material—which contains plutonium, strontium, and cesium among a wide range of hyperactive and long-lived substances—in five unlined trenches, each about the size of a football field. The facility is to be run by U.S. Ecology, formerly Nuclear Engineering, a corporation whose track record includes oversight of a similar—now closed and badly leaking—facility at Barnwell, Utah, as well as the disastrous West Valley enterprise in upstate New York; Kuletz, *Tainted Desert*, 156–157; Berger, *Nuclear Power*, 104.

202. The phrase does not accrue from radical rhetoric. See the unabashed advocacy of the trend, both technically and politically, advanced in *Deserts as Dumps? The Disposal of Hazardous Materials in Arid Ecosystems*, eds. Charles C. Reith and Bruce M. Thompson (Albuquerque: University of New Mexico Press, 1992).

203. For a more panoramic view of the phenomenon in its various dimensions, see Donald A. Grinde and Bruce E. Johansen, *Ecocide of Native America: Environmental Destruction of Indian Lands and Peoples* (Santa Fe: Clear Light, 1995).

204. Felix S. Cohen, "The Erosion of Indian Rights, 1950–53: A Case-Study in Bureaucracy," *Yale Law Journal* 62 (1953): 390.

205. Gyorgy, et al., *No Nukes*, 12; Sternglass, *Low Level Radiation*; Miller, *Under the Cloud*.

206. There is simply no substitute for natural uranium. Neither enriched uranium nor plutonium can be produced without it, and the thorium-derived U-233 does not fulfill the same requirements; David R. Inglis, *Nuclear Energy: Its Physics and Social Challenge* (Reading, MA: Addison-Wesley, 1973).

207. David Burnham, "8,000 pounds of Atom Materials Unaccounted for in U.S. Plants," *New York Times* (5 Aug. 1977).

208. See, for example, Gyorgy, et al., *No Nukes*; Falk, *Global Fission*.

209. Alex Haley, *The Autobiography of Malcolm X* (New York: Ballantine, 1965), 329.

210. For the most current overview, see Jay M. Gould, *The Enemy Within: The High Cost of Living with Nuclear Reactors* (New York: Four Walls Eight Windows, 1996). Also see Sternglass, *Low Level Radiation*; Gofman and Tamplin, *Poisoned Power*; Bertell, *No Immediate Danger?*

211. A solid case can be made that the whole anti-tobacco craze of the 1990s is more than anything a well-calibrated diversion intended to draw public attention away from

the mounting health effects of radioactive contamination (tobacco, unlike plutonium, having no strategic value). For a classic illustration, see Stanton A. Glantz, et al., *The Cigarette Papers* (Berkeley: University of California Press, 1996), introduced by former U.S. Surgeon General C. Everett Koop. The entire 497-page text is devoted to explaining how tobacco smoke is responsible for virtually every disease known to man, and how the cigarette manufacturing industry knowingly suppressed such information for decades. Nuclear contamination is left altogether unmentioned—there are not even index references to substances like plutonium—as is the ongoing pattern of official suppression of relevant health data (overseen in part by Koop).

212. For elaboration, see Richard Leakey and Ronald Lewin, *The Sixth Extinction: Patterns of Life and the Future of Mankind* (New York: Doubleday, 1995).

213. This is essentially the strategy advocated by Jay M. Gould in his “The Future of Nuclear Power,” *Monthly Review* 35:9 (1984). Also see the closing chapter of *The Enemy Within*.

214. See, for example, Richard Drinnon, *Facing West: The Metaphysics of Indian-Hating and Empire Building* (Minneapolis: University of Minnesota Press, 1980).

215. For articulation of the legal arguments, see Lee C. Buckheit, *Succession: The Legitimacy of Self-Determination* (New Haven: Yale University Press, 1978); Catherine Iorns, “Indigenous Peoples and Self-Determination: Challenging State Sovereignty,” *Case Western Journal of International Law* 24 (1992).

216. Robert Jay Lifton and Eric Markusen, *The Genocidal Mentality: Nazi Holocaust and Nuclear Threat* (New York: Basic Books, 1988).

217. For a good treatment of an analogous phenomenon, see Deborah Lipstadt, *Denying the Holocaust: The Growing Assault on Truth and Memory* (New York: Free Press, 1993).

218. Analysis on each of these points will be found in Ward Churchill, *A Little Matter of Genocide: Holocaust and Denial in the Americas, 1492 to the Present* (San Francisco: City Lights, 1997).

219. This goes to the notion of “enlightened self-interest” as explicated by Ernst Cassirer, *The Philosophy of Enlightenment* (Princeton: Princeton University Press, 1951).

220. See, for example, Cynthia Peters, ed., *Collateral Damage: The “New World Order” at Home and Abroad* (Boston: South End Press, 1992).

221. A snapshot of such possibilities is contained in Samir Amin’s *Delinking: Towards a Polycentric World* (London: Zed Books, 1985).

222. On Manson, see Ed Sanders’ *The Family*, rev. ed (New York: Signet, 1990).