A HISTORY OF URANIUM MINING IN CANADA

Peder Anker
New York University

ABSTRACT

The history of uranium mining on indigenous land in Canada is a story of settler colonialism, conflicts, and a clash of systems of belief. Pending whose knowledge you seek and which rationality you chose, it's a history that entails both pessimistic and optimistic perspectives. The miners believed in a rationality of prosperity at the expense of the existing First Nation cultures. It's a history of settler colonialism in which the process of conquest generated counterclaims of defeat. The ongoing clash between claims and counter-claims, prophecies and counter-prophecies, traditional and scientific knowledge, mark the history of Canadian mining along with the larger history of nuclear industries and weaponry. The Canadian uranium mines of the 1930s recuperated the first reactions to nuclear industries and disasters, but were also an early warning about what uranium-bearing minerals could do. That came in the form of what sounded like a mystical prophecy to Western ears, though to indigenous culture it was understood as medical advice. By untangling different rationalities for mining as well as a few early voices of resistance to it, the aim of this article is to uncover the origin and social dynamics of benefitting and suffering that came to mark a global crisis.
Keywords: uranium mining; nuclear history; Canada; indigenous studies; environmental history.

SOMBE KE, "THE MONEY PLACE"

About a hundred and fifty years ago, in the 1880s, a medicine man of the Dene First Nation made a chilling prophecy. Ehtseo (grandfather) Louis Ayah (1857-1940) was still young, but would soon become their recognized spiritual leader. He was hunting with some friends for caribou along the eastern shore of the Sahtú (the Great Bear Lake). They had ignored traditional beliefs and camped for the night by some large rocky cliffs known as Sombe Ke ("the money place"). A forbidden place, those cliffs were said to be bad for health if anyone stayed in their proximity. In the middle of the night, Ayah awoke suddenly and began singing until the very morning. When he was done, his fellow hunters asked him what was going on. "I foresaw many things and I was disturbed," he told them. He continued:

> I saw people going into a big hole in the ground – strange people, not Dene. Their skin was white. They were going into a hole with all kinds of metal tools and machines and making a lot of noise, so I followed them. They were going back and forth into that hole. They were digging a great tunnel. … On the surface where they lived, there were strange houses with smoke coming out of them. Another thing I saw were [sic] big boats with smoke coming out of them, going back and forth on the river. And I saw a flying bird – a big one. They were loading it with things. It didn't seem to harm anybody, but it made a lot of noise. … I watched them and finally saw what they were making with whatever they were digging out of the hole – it was something long, like a stick. I wanted to know what it was for – I saw what harm it would do when the big bird dropped this thing on people – they all died from this long stick, which burned everyone. … The people they dropped this long thing on looked like us, like Dene. I wondered if this would happen on our land or if it would harm our people. But I saw no one harmed here, only the material that was taken out of our land by people who were just living among us. That bothered me. But it isn't for now; it's a long time in the future. It will come after we are all dead. (Ayah quoted in Blondin 1990, 78-79)

The prophecy has been haunting the Sahtu Got'ine (Dene-speaking people who live around Great Bear Lake) ever since, passed down from generation to generation, deciphered and emulated. At first, they did not know what to make of it. Looking back at it today, most of them think that it came true. The rocky cliffs where the prophecy was given became the site for the mine which delivered the majority of the uranium for the Manhattan Project. Perhaps the "stick" resembled the elongated shape of nuclear bombs, and the people who were burned were the citizens of Hiroshima? Why did the hunters choose to rest by the forbidden cliffs? And could it all have been avoided, had they listened more carefully to the prophecy? These are questions the Sahtu Got'ine have been struggling with since then. The dark prophecy represents the first murmurings of a history that begins far away from where histories of nuclear bombs usually launch. Instead of starting with the work of famous scientists, the history of nuclear weaponry may as well begin at the material origin of bomb making and with the labor that made it possible at Sombe Ke, the "money place."

The mine at Sombe Ke is located at Cameron Bay, an inlet along the eastern shoreline of the Great Bear Lake, near the Arctic Circle in the Dene First Nation. As long as anyone can recall, the Sahtu Got'ine have been living peacefully as nomadic people in coexistence with the Sahtú. "The Dene were at one with the land, knowing how to

live in every season, in every place. … They knew their land so well that, as they journeyed through their vast territory, they were never lost," a knower of their culture, Sara Stewart (2021), notes (206). When not traveling to hunt and fish, they lived in the Délįne village, which means "where the waters flow," referring to the path of water from the lake into the Sahtúdé (Great Bear River). Selling or trading animal skins was a chief source of income, which left a paper trail with the North West Company beginning in 1799. This paper trail allows them to enter Western versions of history in the form of parcels of fur and written documents (Asch 1977, 47-61).

By 1930, when the mine at Sombe Ke opened, the historical significance of the Sahtu Got'ine would still be measured in terms of goods, except that the type of commodity had changed. Still nameless, they now emerge in mining records in terms of how many sacks of mineral ore they could carry.[1] They carried bags of it from the underground mine to a waiting boat which would ship it out for further processing. It was tedious work that lasted all day, and sometimes extended into the night. To make matters worse, the bags were heavy, 110 lbs. (50 kg), and they had no way to carry them except on their shoulders. It could take five to six days to fill the boat, after which they were allowed a rest. At times, the bags, made of cotton or jute, would spill, so they would have to gather the spilled mineral with their bare hands as best as they could, and place it in a new bag. In the course of this work, it was hard, almost impossible, to not inhale the dusty powder.

The workers' families lived at the other side of Sahtú in the Délįne village. This was also the home of Ayah, who made a series of dark predictions in the 1930s. He spoke of the changing lifestyle of Dene culture, which was under pressure from Canadian colonialism and modernization attempts, such as mining. Among his many gloomy forewarnings, Ayah predicted that the Sahtu Got'ine would suffer from a "new kind of sickness you have never heard of" and that there will also be "horrible things you have

[1] The archives of the Eldorado Mine are not accessible to the public due to nuclear secrecy, with the exception of Robert Bothwell's helpful and detailed history (University of Toronto Press, 1984), with labor culture discussed on pages 38-77.

never seen before" (Ayah 2016). These prophecies were barely audible or discussed, even among indigenous people. Today the Sahtu Got'ine believe these predictions came true, as within the next decades Délįne villagers were hit by rare cancers of the neck and shoulders, the same areas where they had carried the bags of ore.

THE ELDORADO GOLD MINE

The colonial history of uranium mining starts with the prospector Gilbert LaBine (1890-1977) who, in 1926, was a recent graduate of the Haileybury Provincial School of Mines, in the town of Cobalt (Ontario). The unearthing of silver in Cobalt in 1903 resulted in a silver rush to the town and the opening of the largest silver mining camp in the world, with the new riches making the School of Mines the best and most prominent mining school in Canada. LaBine was in the midst of this silver craze, observing firsthand how wealth could fall quickly into the hands of prospectors. He did some of it himself in the Cobalt region, and founded The Eldorado Gold Mines Ltd., in 1926, to pursue the cause. There were numerous prospectors around Cobalt, and some of them were indeed successful. The name of his company was designed to lure investors into financing his search for treasures. Enthused by the possibility of finding silver and gold, he studied the Geological Survey of Canada and various explorer accounts of possible mineral ores along the eastern shore of the Great Bear Lake.

In 1930, Le Bine went to explore the area himself, and met a Sahtu Got'ine known as Old Beyonnie, who showed him a rock with interesting minerals he had found at Sombe Ke. Noticing that it was pitchblende (or *uraninite*, in today's terminology), he gave Beyonnie $20 for the mining rights along with a verbal promise of a percentage of the profit (which never materialized), and subsequently registered the mining rights for Sombe Ke region under his company's name (Blondin 2021, 204; Bothwell 1984, 20-23). To LaBine, the place was simply unexplored land that could—and should—be developed to generate wealth for the nation, and himself. This type of settler colonialism involves, as Traci Brynne Voyles (2015) has pointed out, a "complex construction of that land as either always belonging to the settler—his manifest destiny—or as undesirable, unproductive, or unappealing, in short as wasteland" (7). The eastern shore of the Great

Bear Lake was indeed perceived as unproductive land to be exploited to LeBine, and the irony here is that the land later actually became an unproductive polluted wasteland, or what Marco Armiero calls a "wasteocene" (1), because of the mining of radioactive materials LeBine initiated.

Pitchblende is the uranium rich radioactive material from which Marie and Pierre Curie extracted the radium chloride compound back in 1898. By 1911, they had further isolated the radium chloride to its metallic state. Radium was used for experimental and medical purposes, most prominently as a promising component in a cure for cancer. Its ability to glow in the dark made the metal alluring to the general public as well, where it was used in state-of-the-art watches and high-end toys for children. Its many uses made radium into a true societal gem. The newly discovered metal became, in the words of the historian of science Luis Campos (2015), "the secret of life" (1). A 1913 article from *The New York Times*, for example, reported that with the discovery of radium, "Science [was] on Road to Revolutionize all Existence." The "march of science" would, thanks to radium, liberate a new powerful energy for human use and the "Results Would Be Vast" as "an ounce of radium would produce as much effect as much as many tons of the most powerful detonator known" (Soddy SM6).

Radium was new and novel. It represented the cutting edge of scientific research, and the virtues of the metal were to lead to human prosperity and progress. No wonder then that in the mid-1920s it became the most luxurious and expensive metal in the world, with a price tag over $100,000 a gram. That would not last long, with the discovery of a rich ore in the Belgian Congo. The Belgians (or the poor African Congolese miners working for the Belgians) would drive out their competitors with inexpensive radium, in effect creating a world monopoly on its production by 1930. Yet it was still a lucrative business, fetching $75,000 a gram (or about $1 million a gram in today's money) (Bothwell 1984, 7-8).

It was the possibility of earning money on radium that lay behind LaBine's decision to open a mine at Sombe Ke in 1930 under his company name the Eldorado Gold Mine. Owning shares in the mine represented an investment in the future, and LaBine used the novelty of radium and its high monetary value to promote his company.

In the late 1920s, there were speculations in the press and among scientists on the possible transmutation of radioactive metals into gold. This ultimate alchemical dream would even cause worries within the official US federal government about a monetary collapse, if scientists succeeded in making gold (Matínez 2011, 91). Yet, by 1932, the Eldorado Mine would take "gold" out of its name as it became clear that pitchblende for the purpose of extracting highly valued radium would be the mine's sole purpose. The ore at Cameron Bay was considered to be rich in comparison to its chief competitor in the Belgian Congo. In Eldorado, it took 15 tons of ore to recover one gram of radium, though the process was cumbersome and, in the end, barely profitable. The mine would extract about one ton of ore a day and ship it out for processing. Soon, Sombe Ke was renamed "Port Radium," complete with a settlement in the proximity of the mines where the workers could rest, and the initial processing of the ore would begin.

The workers within the mine were mostly immigrants of European descent, as the tooling required special skills and social trust, while indigenous people carried the bags of uranium ore from the mine to the dock from where M/S Radio Gilbert (named after Gilbert LaBine) would transport it away for further processing. The Eldorado Mine was built with a colonialist ethic of conquering foreign land and its people for the benefit of white settlers. It was a racist mindset and sense of superiority that allowed its culture of exploitation. And it was all driven by visions of radium as a bringer of prosperity and progress.

This had consequences for how Eldorado would run its mine. The initial expenses in opening a mine were massive, but they were an acceptable risk considering radium represented the very future of humankind. While waiting for the profit to materialize, the miners were given salaries well below comparable occupational wages in the region. As it turned out, the prospect of progress would keep their compensations below living wage for decades, as the mine would not earn enough to pay the shareholders any dividend or raise the miners' compensations until the 1950s. The hope in prosperity was what kept both investors and blue-collar workers going.

The belief in progress also had consequences for the handling of pitchblende. Because radium was regarded as an intrinsically good thing, only true skeptics would

question its many virtues. The exception to this trend was an engineer within the Canadian Government's Department of Mines who spoke out; his name was W. R. McClelland. In a report from 1931, he wrote that

> [r]ecent investigations in the field of radium poisoning have led to the conclusion that precautions are necessary even in the handling of substances of low radioactivity. The ingestion of small amounts of radioactive dust over a long period of time will cause a building up of radioactive material in the body, which eventually may have serious consequences. Lung cancer, bone necrosis, and rapid anemia are possible diseases due to the deposition of radioactive substances in the cell tissue or bone structure of the body. (McClelland 1931, 23; Fletcher 2015)

Yet, there is no evidence of his warnings being known to anyone near Eldorado, or anywhere else for that matter. Indeed, his finding seems to have been intentionally or accidentally buried, as it did not surface until recently when historians and activists began researching how much the government and the mining company knew about the dangers of radioactive material in the 1930s (Edwards 2010; Edwards 2016; Fletcher, 2015).

None of the workers were told that being in contact with radioactive material could be dangerous. As a consequence, they did not use protective clothing and handled bags of pitchblende with their bare hands until as late as 1937. The exception to the rule was the expert in radium processing, Marcel Pochon, who negotiated a clause in his contract of continuing pay in case of radium poisoning (Bothwell 1984, 57; Moss 1981). He was aware of the dangers, though there is no evidence of him passing on the knowledge. There was not any evident ill intent from him or anyone else here. Instead both experts and lay miners seemed to be blinded by the dream of having found a financial Eldorado.

Yet, for all their optimism, the mine did not do well financially, as it was soon caught in the downward spiral of the economic depression of the 1930s. The Belgians would ratchet up their production in Congo and saturate the market with cheap radium, causing the price to drop to $25,000 a gram by the late 1930s. Cuts in government medical spending would lead to less demand for radium, and by the summer of 1940,

Eldorado was sealed, leaving only a couple of caretakers to keep an eye on the mine and its equipment. This would not hinder the mine's President LaBine from promoting the company's shares to raise money. As its largest shareholder, he could not let go of the social and scientific optimism with respect to what radium could do.

MINING URANIUM FOR THE MANHATTAN PROJECT

One of the waste products from the Eldorado Mine was lots of uranium oxide, along with some noxious arsenate, cobalt, and silver. The problem with the uranium, however, was that it had limited use. In the late 1930s, Eldorado had tried to develop a market for particularly tough uranium-grade ceramics, but it failed. They also tried to develop a market for uranium-enhanced red and orange colors for artists, with little success. They had a small market among laboratory researchers, as in the case of the National Research Council in Ottawa and Columbia University in New York, each of which purchased tiny amounts. But that was about the extent of the available market. As a result, a large amount of uranium oxide was stored at the mine, at the factory site in Port Hope, or simply dumped in nearby environments, including the Great Bear Lake.

However, the limited market and use would expand with the onslaught of the Second World War, which Canada entered in September 1939 along with the British. How could the nation contribute to the war besides sending soldiers to fight the Germans? As a country with large amounts of natural resources, the government aligned its minerals and metals for the production of weapons. Perhaps radium with all its virtues could also be of military interest for bomb-making? "If radium can be made a decisive factor in war," a journalist from the *Toronto Daily Star* noted, then "Germany will be out of luck for Canada has in the Eldorado mine in Great Bear Lake the largest deposit of radium in the world" (Plewman 1940, 7). The board at the Eldorado Mine had worked under the assumption that they were producing a medical product, and their know-how was based on the science of geology, chemistry, and metallurgy. Now they began pondering if radium could be of any help in the war effort.

To the extent they had contact with scientific communities, it was through small shipments for laboratory work in radiochemistry. They had very little knowledge of or

interest in physics. The headlines in the summer of 1939 proclaimed that one "might blow world sky-high by splitting uranium atom" (Anonymous 1939, 1, 5). If the scientists were able to control the energy of uranium-235, LaBine told the press in the spring of 1940, Eldorado had accumulated large stocks of the uranium oxide to meet a "terrific overnight demand" for it (Anonymous 1940, 2). On December 7, 1941, the Japanese attacked Pearl Harbor and the Americans joined the war. Only months later, in March 1942, the head of the Manhattan Project, Vannevar Bush, sent Eldorado a surprise order for sixty tons of uranium dioxide. Moreover, he indicated that new and larger orders were on its way. This was truly exciting for LaBine, who quickly organized shipment of the uranium they had stored at their sites and sent orders for his workers to begin gathering the uranium oxide they had dumped in nearby environments. These actions represent the very origin of nuclear bombs, a weapon only thinkable without plenty of uranium oxide.

Figure 1. The Eldorado Mine at Port Radium in 1947. Credit: NWT Archives/Robert van't Hoff fonds/N-1995-007: 0022. Photo by Signalman Robert van't Hoff.

The order was large enough to reopen the Eldorado Mine. The Brits were also advancing plans to build nuclear bombs under the code name Tube Alloys, and consequently ordered twenty tons of uranium dioxide from LaBine in July, 1942. Given the previous large US order, the Eldorado Mine could not begin working on the British order until

October with eventual delivery in the summer of 1943. In the meantime, the Americans put in orders for uranium dioxide of a magnitude so large that the Brits would not get any more of it during the war. In other words, the Americans would, in effect, be the ones with enough oxide to build nuclear weapons.

The people at the Eldorado Mine had no clue what all the uranium was good for. There were few workers at the mine with long-term experience, as those with the know-how had moved on to other jobs when the mine closed back in the summer of 1940. As a result, the mine had to scramble to hire whoever they could convince to work for them, including high-school students, newly released jail inmates, army rejects, and women. It is the work of these unknown hands that begins the material trail––"the highway of the atom"—that led to nuclear destruction (Wyck 2010). And yet there is little evidence of people being concerned about working with radioactive materials or being aware that it was for serious bomb-making. The pay was low, lower than local sanitary workers, and physically hard and monotonous. And the turnover was high. As a result, there would be accidents, inefficiencies, and miners leaving for better jobs elsewhere. Things got better when the mine got unionized in 1943, with work hours dropping from 54 to 48 hours a week. Still Eldorado was not an attractive place to be.

Between 1942 and 1946 the Eldorado Mine would process about two thousand tons of uranium dioxide for the Manhattan project. It was not the only source of uranium for the Americans. Some of their uranium oxide came from the above-mentioned mine in the Belgian Congo, which had stored some of it in a warehouse in New Jersey where it was confiscated by US authorities to the benefit of the war effort (Jones 1985, 64-65). Another portion, about 15% of the uranium used for the Manhattan Project, came from piles of vanadium tailings in mines on or near the Navajo Nation in the United States (Voyles 2015, 2). Thus, the American bomb-makers relied almost exclusively on Canadian uranium oxide. The Canadian government realized that the Eldorado mine was important for the war effort, but also of national diplomatic interest. To gain full control of the ore, the Canadian government purchased the Eldorado Mine, which provided key shareholders, including LaBine, with a healthy profit. Those, however, who had invested in the mine during the radium craze of the early 1930s, lost

money. The takeover allowed the Canadian government to make sure the oxide would only be delivered to military projects, which in effect made the Manhattan Project the mine's only customer. The reason for the government takeover was a well-guarded military secret. The story leaked to the press stated that the Government had taken over the mine because radium was of military interest, while the press did not mention uranium at all (Anonymous 1944, 2). At the same time, Canadians initiated their own wartime uranium research which helped establish a legacy of nuclear power in the nation (Andrews, et al. 2021).

A COLD WAR ELDORADO

On August 6, 1945, the bomb made with uranium from oxide excavated in Eldorado exploded over Hiroshima: "We have won the battle of the laboratories" against the Germans, reported *The Toronto Star*, with Canada "providing indispensable raw material" for the bomb (Anonymous 1945, 4). Yet, at the end of the war the Eldorado Mines' financial prospects were somewhat bleak. While they had a near monopoly over uranium during the war, the price of uranium was set artificially low by the Canadians as part of the country's war effort. And with the end of the war, new mines producing uranium at a lower cost soon emerged. The Belgian mine in the Congo produced oxide at about $5,000 per ton, compared to $25,000 per ton for Canadian ore. Choosing a provider was a political as well as a financial question for the Americans, who diversified their sources and financially favored uranium from the Congo (Hecht 2012).

With the production of nuclear bombs escalating during the Cold War, pitchblende became a much sought-after and diplomatically-sensitive mineral oxide. At the time, the Americans were uneasy about the position of the Canadians. There were security issues with a Canadian spy-ring delivering secrets to the Soviets, the issue of a political bias towards the British with Canada being part of the Commonwealth, and a general feeling of not being in direct control of a material of vital importance for American interests (Knight 2005). In trying to negotiate their position, the Canadians sought to hammer out a policy for uranium oxide distribution through the United Nations, a position that made perfect sense to the Americans as long as no uranium

oxide was delivered to the Soviets. To keep control of the uranium the Americans continued to order pitchblende from Eldorado. With numerous tests of nuclear bombs and the radical build-up of the nuclear arsenal, Eldorado saw a steady increase in orders. By 1950, "uranium mining and selling ha[d] become a big and profitable business," a financial journalist noted, providing Ottawa with a healthy profit (Greer 1951, 13). New mines, including one in Saskatchewan, would provide a steady supply for the high demand. Indeed, by 1959, there were twenty-three uranium ore mines in Canada, valued at $330 million a year, more than any other mineral shipped out of the nation (Harding 2007; Haalboom 2016; Keeling 2010).

However, the profit did not trickle down to the Sahtu Got'ine, who would continue to work twelve hours a day, six days a week for four months a year. They would sleep in Port Radium on used oxide bags and eat fish caught from contaminated water. The pattern of bodily protection had improved somewhat, with them now using gloves, though they would still breathe in the dusty powder from the bags. Unlike the white workers in the mine, the Sahtu Got'ine workers were not offered a shower so that they could wash the dust off. Back in Délı̨ne, their traditional tents were sewed together from used uranium sacks donated in a gesture of good will from Eldorado. A reasonable connection between cancer and radioactive material was still questioned in local news as late as 1975 (Dalby 1975).

The mining would continue at Eldorado until the quality of the uranium declined and the ore was exhausted. The company also brought in machinery to dig up whatever uranium was left in the lake where it had been dumped in the 1930s. In 1960 the mine was closed, except for a short period in the 1970s when a different company extracted silver and copper at the Eldorado site. In 1982 the mine was closed for good, and Port Radium burned.

PROPHECIES COMING TRUE

In 1998, the Canadian filmmaker Peter Blow released *The Village of Widows*, a moving documentary about what happened to the Délı̨ne community due to its exposure to radioactive materials (Blow 1998; Déline Dene Band Council 1998; Salverson 2011;

Barbour 1998). It was an eye-opening film for many Canadians, made largely based on materials gathered by and interviews done with members of the Déljne Uranium Committee. Among the interviewed was a committee of Sahtu Got'ine ready to address what they saw as deep environmental injustices that had been inflicted upon their people, especially on the Déljne village. "In my mind it's a war crime that has been well hidden," its chairwoman Cindy Gilday said. "The Dene were the first civilian victims of the war and the last to be addressed" (quoted in Nikiforuk 1998, A1, A4). Their chief Raymond Tutcho was equally upset: "We the Dene have been subjected to over 60 years of horrible injustice because of apparent national interests. Our people have paid for this with our lives and the health of our community, lands and waters" (Tutcho, quoted in Dene Uranium Committee 1998). They used the documentary to call for an environmental clean-up of the Eldorado site and monetary compensation for lives lost.

The Village of Widows tells the story of Eldorado by focusing on how a village that had never registered cancer before sees many members of its population dead from the disease. The vast majority of the miners were men, which left the women as widows, but also endangered the aspects of Dene culture that had traditionally been passed from men to their male descendants. As a result: "The Dene of Deline are now [in 1998] living in fear of their land, water, animals and worried for their own health and survival" (Kenny-Gilday n.d.). The documentary showed to all what Sahtu Got'ine had known for long, namely that Ayah's old medical prophecies about sicknesses and the destructive weapon had come true. As a result, they pleaded for environmental justice and traveled to Japan to express remorse for unknowingly having been involved in producing such a terrible weapon (Goodspeed 1998; Knight 1999). In 1999, the Canadian government agreed to begin cleaning up Cameron Bay, and 1.7 million tons of radioactive material was removed in subsequent years.

Meanwhile people in the Déljne village began the process of documenting their history and the environmental injustices done. They found that out of 35 men who worked in the mine, "at least 10 have died of rare bone cancers, as well as lung, kidney, stomach, and bowel cancers — all cancers that can be caused by ionizing radiation." These were only the deaths that could be medically documented, as additional known

cases of mining-related illnesses leading to death could only be confirmed by oral history. Moreover, families of those who had carried uranium oxide or people living along its transport route were subject to a high level of cancer mortality. "Women's descriptions of life and work in this economy reveal that miscarriages were common, and provide accounts of still-births and strange deaths and illnesses (like deformities and leg cancer) suffered by young children" (Deline Uranium Team 2005, 56, 92, 95, 105). As Anna Stanley and others have shown, the emotional and physical impact of the mining on the Sahtu Got'ine has been significant (Stanley 2015; Stanley 2013; Parlee et al. 2007).

The response from the Canadian government health officials to these reports has been in line with the legacy associated with the uranium mining of the 1930s. In 2005, the Canadian government scientists investigated the claims of environmental harm, and concluded in its official report that the miners had not been overexposed to radiation, and that the Eldorado site was "below risk levels for background exposure." They "concluded that exposure to metals on the Port Radium site will not result in adverse effects to anyone." According to the scientists, living and working in proximity to the Eldorado mine would not result in greater risk than in other places (Canada Deline Uranium Table 2005, 73, 74, 78). Mathematical risk modeling was behind the argument, which suggested that the unusual cancer pattern among the Sahtu Got'ine villagers and oxide uranium carriers was the result of the probabilistic nature of cancer. The government report received national attention with newspapers concluding that the former workers at the Eldorado Mine had not much to complain about, as the exposure levels to radiation was not high enough to cause cancer (Anonymous 2005). Soon alternative explanations began surfacing suggesting that the cancer rates had other causes. Could it be the Dene's notorious smoking habits? The government report upheld a familiar line of argumentation to indigenous people reaching back to the 1930s. It also led the way for the more recent prospect of reopening the mine, with mining companies strategizing in 2014 on how to deal with First Nation interests (Graetz 2014). Interestingly, a recent study from 2022 concluded that the "radiation risks of lung cancer among men increased significantly" for workers at the Eldorado mine who were exposed

to radiation, thus reverting the scientific conclusion of previous studies (Zablotska et al. 2022).

The story of the Sahtu Got'ine is not unique. As Winona LaDuke has pointed out, First Nations people hold a significant amount of the world's uranium resources on their land and can as a consequence be linked not only to Hiroshima but "to more than a thousand nuclear tests" in Nevada and the Pacific (LaDuke and Cruz 2012, 37; Johansen 2016). In many, if not most, of these cases, optimistic as well as pessimistic prophecies have been rationalized. These are cases of typical settler colonialism, where one part moves in with a vision of prosperity at the expense of an existing lifestyle or culture. As scholar of Indigenous history Patrick Wolfe (2006) has pointed out, "the process of replacement maintains the refractory imprint of the native counter-claim" (389). The ongoing clash between claims and counter-claims, traditional and scientific knowledge, mark these stories which are rarely resolved. Is it all in the eye of the beholder? Or is it in the power of the best argument?

The question still remains: why were the environment of the Sahtu Got'ine destroyed in order to create destruction? Today the Sahtu Got'ine still turn to Ayah's thinking for elucidation and reflection (Clements 2003; Gilbert 2013). His predictions remain eerily relevant, as in the case of his prophecy of how the world will end. It will resemble that of a swift nuclear blast: "This is how fast it will end. Clap your hands together in front of you as fast as you can, it will be faster than that" (Ayah 2016, prophecy 7).

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Peder Anker is Professor of History of Science at New York University. He is the author of Imperial Ecology: Environmental Order in the British Empire, 1895-1945 (2001), From Bauhaus to Eco-House: A History of Ecological Design (2010), and The Power of the Periphery: How Norway Became an Environmental Pioneer for the World (2020). His latest book Livet er best ute (2022) explores the importance of outdoor life in Norwegian culture. Twitter: @pederanker. Page: pederanker.com. Email address: peder.anker@nyu.edu.