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Seeds as Ancestors, Seeds as Archives: Seed Sovereignty and the Politics of Repatriation to Native Peoples

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In 1917 Buffalo Bird Woman, a Hidatsa seed keeper, described her nation's relationship between plants and people: "We cared for our corn . . . as we would care for a child; for we Indian people loved our gardens, just as a mother loves her children."[1] Bird Woman's words provide a glimpse of the reciprocal connection that Native peoples across the Americas established with plants. Plants have nurtured their communities' physical, spiritual, and social well-being, while people reciprocated not only in caring for plants as treasured children but also in cherishing them as ancestors who are integral actors embedded in a wider ecosystem. With encroachment of non-Native peoples, however, the oppressions Native peoples have suffered from settler colonialism—disease, violence, containment, and assimilation—have also threatened the well-being of this wider web of relationships among people, plants, and the landscape, including the relationship with indigenous seeds. Certain settler-colonial practices threatened indigenous agriculture directly, such as removal of Native peoples from their homelands, destruction of indigenous ecosystems through resource extraction (including Euro-American farming), assigning Native families allotments of land, degrading local indigenous diets, forcibly assimilating children through Euro-American education systems, and disenfranchising women from their roles in farming by coercing men to use Western techniques

The tumultuous changes imposed by settler colonialism resulted both in profound loss of knowledge and in damaged seed stock. Throughout these upheavals, some

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Native individuals fought to retain their knowledge and to plant valued seeds to keep them viable. The seed keepers who protected indigenous seeds maintained archives central to revitalization—in their knowledge, their practices, and in the seeds themselves. These archives have played a central role as Native peoples fight to rebuild their nations in the wake of settler colonialism's destruction. Maintaining autonomous reciprocal relationships with their known landscapes has been essential to revitalizing cultural and political autonomy. During the twentieth century, it has involved fighting for treaty rights on the land and in the courts, as well as maintaining seeds and passing on plant knowledge. Now in the twenty-first century, Native communities have vastly expanded the revitalization of indigenous foodways, including practicing ancestral agriculture and rejuvenating seed stocks. This paper explores these relationships, how they have been disrupted, and the potential of repatriating seeds as a part of repairing them today.

In part inspired by the food sovereignty movement, Native peoples across the United States have become energized in their work to incorporate foodways into their efforts at cultural and political revitalization. Indigenous peasant farmers in Latin America who sparked the movement through their fight against the destruction of their agrarian way of life have been joined across the globe by communities as diverse as upper-middle-class foodies and subsistence-based indigenous peoples.[2] Broadly speaking, food sovereignty secures the right of communities to shape and craft local and national food policy, but more specifically, it involves the idea that we all deserve to be able to eat healthy, nutritious, and culturally valued foods and to be able to acquire them in culturally appropriate ways.[3]

Yet "sovereignty" implies imposing control over the land, while Native revitalization projects emphasize autonomous, reciprocal relationships safe from outside manipulation. Reestablishing these relationships has become a primary goal for many Native nations. They recognize that nations are not truly politically autonomous without the ability to shape their food system.[4] An autonomous relationship with the landscape and food-providing entities within it revitalizes the social, physical, and psychological wellness of indigenous peoples, at the level of the body, the kinship network, the community, and the wider ecosystem. Ultimately, food sovereignty is not possible without seed sovereignty: seeds are essential to the revitalization of indigenous landscapes, plants, and foodways. So as a part of this process, many communities today have begun working not only to rejuvenate the relationships between people and plants, but also to repatriate seeds and bring them back to their home communities.

Many seeds valuable to Native communities are being held in seed banks today. Some are seed banks committed to maintaining and providing indigenous seeds to gardeners. Native Seed/SEARCH, one prominent bank, preserves seeds native to the southwestern United States and northern Mexico and shares them with Native farmers.[5] Seed Savers Exchange, a nonprofit in Iowa, has a similar mission but conserves endangered seeds from a wider range of geographic and cultural origins.[6] Several Native communities throughout the United States have begun seed banks, libraries, and exchanges. In the Midwest, White Earth Ojibwe's Land Recovery Project and Gun Lake Tribe's Jijak Foundation both perpetuate and distribute indigenous seeds

to Native farmers.[7] These two organizations also work to preserve Native knowledge connected to the seeds through archiving narratives and teaching community members to grow and save the seeds and cook the vegetables they produce. One group in the Midwest, the Heritage Seeds for Sustainable Lifeways, has begun the process of repatriating seeds and affiliated knowledge curated by the University of Michigan through partnering with regional tribal representatives to develop a protocol.[8]

While these programs provide vital support for Native peoples reconnecting with their indigenous seeds, other seed banks with few or no connections to Native communities also hold seeds central to Native lifeways. Botanists have collected indigenous varieties and stored them in seed banks which continue to preserve and maintain their genetic identity. For example, the gene bank at the North Central Plant Introduction Station in Ames, Iowa, houses a large variety of seed collected directly from indigenous peoples during the turn of the twentieth century. United States Department of Agriculture (USDA) banks like this one make their seeds available to the public, but they can be difficult to obtain. While Native people do acquire indigenous seeds from some seed banks today, uncovering their locations can be challenging because seed banks rarely prioritize ethnographic or historical information about their collections. Tracing the heritage of seeds in many seed banks can therefore be time-consuming and Native people working towards food sovereignty are often already overcommitted.

Repatriation of seeds is an important step towards indigenous food sovereignty. Seeds are culturally and historically important to their community of origin, and some are also vital for religious practice. It is reasonable, therefore, that seeds be treated as the cultural legacy and sacred entities that they are, and, like other ancestors, cared for in traditional ways and returned to their kin. Michael F. Brown has asked, "How can we promote respectful treatment of Native cultures and Indigenous forms of self-expression within mass societies?"[9] This paper applies his question specifically to seed banks and maintains that to promote culturally appropriate care, these banks might systematically implement a repatriation program that would ease Natives' access to their seeds and reunite them with their home communities. Repatriation of seeds to Native communities could become a part of the process of repairing relationships severed by United States federal policies such as removal, allotment, and agricultural programs. It could foster a much-needed dialogue between Native seed keepers and seed banks about culturally appropriate care for seeds, allow the seed keepers to access their seeds and to set guidelines for their care, and bring the stewardship of Native seeds back to indigenous seed keepers.

To demonstrate the necessity for repatriation, this paper relates the impacts of colonization on seed sovereignty among Native communities in the Midwest. It then discusses why retaining control over seeds and seed knowledge is so vital to the well-being of Native peoples. It concludes by developing the possibilities of decolonizing seed banks and repatriation, turning for inspiration to the Native American Graves Protection and Repatriation Act (1990), the Protocols for Native American Archival Materials (2006), open-source seed networks, and the Heritage Seed for Sustainable Lifeways project of the Graham Sustainability Institute at the University of Michigan (2017).[10]

Indigenous Agriculture in Central North America

Native people of the upper Midwest and Great Plains developed highly advanced farming practices on the northern limits of agriculture, growing corn, beans, squash, sunflowers, and other crops like tobacco in the region for centuries. Their agricultural practices were well-established when the first Europeans traveled into the area. Fairly certain that agricultural practices diffused to the Midwest from Mesoamerica, archaeologists have evidence that some Native peoples of the Midwest were raising squash by 5,000 BCE and a few thousand years later adopted sunflowers, goosefoot, and sumpweed.[11] Around 800 CE, these farmers shifted from species-diverse garden plots to carefully cultivated fields. By 1,000 CE, the people of the region had developed an agricultural system based on corn, beans, and squash, supplemented by other cultivated plants.[12]

The earliest records created by Europeans traveling along the Mississippi and Missouri rivers mention the impressive agricultural practices and products of the indigenous peoples they met.[13] Native nations throughout the Midwest had been growing corn for centuries before contact, practicing agriculture not only as a central subsistence method, but also as a foundational cultural component. Corn, beans, and squash have played a significant role in oral narratives, in religious practices, and in ordering social relationships.[14] Agriculture has been a profoundly important component for many nations' identities, connecting them to their very origins.

Through careful seed selection and breeding, many Native agricultural communities developed their own varieties of corn. According to George Will and George Hyde, the Pawnees developed somewhere between eight and ten varieties, including a white corn with little purple spots in the center of the kernel.[15] Omahas, Poncas, Iowas, Otos, and Kansa all developed their own varieties as well. Omaha farmers told the ethnobotanist, Melvin Gilmore, that they had once grown dent, flint, flour, sweet corn, and popcorn.[16] Gilmore recorded that Ponca farmers developed five distinct varieties.[17] Will and Hyde describe numerous varieties grown by Dakota and Ojibwe farmers in Minnesota.[18] The Mandan, Hidatsa, and Arikara developed somewhere between nine and thirteen distinct varieties of corn over centuries of seed selection, allowing the adaptations necessary to develop an agriculture that not only sustained them, but provided for a rich economy and religious tradition.[19] The varieties were kept separate because each one had distinct characteristics that were developed with regard to the harsh northerly conditions. They were developed to withstand wind, hail, drought, light frost, and a very short growing season in a northern climate.[20] The characteristics that define them are the very reason that agriculture was so successful in the upper Midwest.

Native agriculturalists traded their vegetable produce in vast networks that stretched from the Midwest to the plains.[21] Because of their geographic position, the Missouri River Tribes were at the center of a vast intertribal network. As more peoples gave up agriculture for a mobile life on the plains, corn became an invaluable trade item for the Mandan, Hidatsa, and Arikara. The fact that these communities had the ability to produce and store a large surplus of food made extensive trade possible.[22]

In many Native agricultural societies, women could attain powerful positions because they owned their fields, regulated their own labor, and had the right to distribute the products of their labor. For example, among the Mandan, women traded without the supervision of men, and because they produced such an abundant supply of agricultural goods, they were able to trade this surplus for exotic goods and game products offered by traders coming in from the plains.[23] Plains peoples held the corn in high value because it was a lightweight, filling, and nutritious food source that they did not produce for themselves.

As Europeans entered the area and expanded the fur trade, the Missouri River Villages attained a central position in relation to this exchange network as well. By 1800, the Mandan, Hidatsa, and Arikara were some of the most prominent traders in the northern plains region, in no small part because of the value of the vegetables they grew. Even after European goods entered into circulation in the Native trade network, corn noticeably retained a high value with both Native and non-Native people alike.[24] Early Europeans valued the trade in corn for many of the same reasons as their indigenous Plains neighbors did. They depended on trade with the Missouri River peoples to obtain vegetables that could sustain them when meat was scarce and could supplement a diet lacking in variety. Furthermore, this trade remained in the hands of the women, allowing them to retain their powerful position in the trade network.[25] Lewis and Clark depended heavily on the agricultural products of Mandan women, particularly corn, when they spent the difficult winter of 1804 to 1805 in the nation's territory.[26]

While different Native nations developed their own varieties through careful breeding and traded produce and seed, many also maintained sacred varieties that they carefully guarded from trade. Ethnobotanist and seed breeder George F. Will recognized that the Mandan developed distinct varieties over centuries, selecting seed for their beneficial and unique qualities. Will even recognized Mandan women's knowledge of corn breeding, stating "the women were the gardeners, selected the seed for the most part and kept the varieties and strains pure. The fact that corn cross-fertilizes was fully understood and care was taken to keep different varieties from mixing."[27] In 1916, Alfred Wenz noted in *The Dakota Farmer*, a local magazine, that a Mandan woman, Scattered Corn, acted as the Keeper of the Corn, a role that had been passed down from one keeper to the next for at least thirty-four generations. Her duty involved keeping the variety pure through careful selection and making sure that the tribe had enough seed for the next year. Although the Mandan grew several varieties, Scattered Corn was only responsible for the yellow corn that in Wenz's words "is the peculiar property of the tribe."[28] Wenz understood this yellow corn to be the intellectual property of the Mandan nation because they bred it through careful seed selection. Property, however, fails to describe the relationship Native peoples have with their seeds.

Scattered Corn guided and guarded the yellow corn seeds, but she could not sell the rights to them, only pass the duty to care for them on to the next Keeper. Most indigenous varieties could be traded, but they could not be controlled because Native people respected the fact that the plants had and do have lives of their own. Seeds have

been considered living beings with consciousness and the ability to determine their impact on the entities around them.[29] In this system of thought, the relationship is not one of ownership but instead is one of reciprocal responsibility—in a manner similar to that of family members. Settler-colonial society claims ownership over resources, while indigenous people establish and maintain kin connections with the landscape.[30] While such a system does not allow people to hold sovereignty over their seeds, people who live so intimately with their plants have for centuries determined what kinds of relationships are appropriate without interference from outside entities. Seed keepers have the cultural, agronomic, and ecological knowledge to decide which seeds to save and store in the community and which to distribute more widely. Other Native nations respected those decisions.

Native people extended the reciprocal relationships they developed with the wider landscape to their domesticated plants. Corn, beans, and squash have been considered sentient entities deserving great respect and care.[31] Autonomy requires negotiating a mutual relationship of responsibility between two autonomous entities—in this case, a Native nation and a plant nation. These beings, especially corn, are of central importance to many nations' origin narratives. Often corn is represented as a female being or a woman whose actions profoundly shaped the future well-being of the people. Many Native nations describe corn as a mother.[32] The image of corn as a mother is more than a simple metaphor. Corn and other plants are sung to, honored in ceremonies, and addressed when harvested.[33] The relationship between corn and people requires continuing reciprocal action to ensure that such a treasured ancestor is honored and respected.

Many Native nations had and have a powerful relationship with indigenous seeds, plants, and their produce that incorporated religion, history, identity, kinship, ecology, food, medicine, and economy. Seeds are relatives, ancestors, and sacred entities. They are also archives in themselves. They hold genetic knowledge, breeding knowledge, knowledge of the appropriate ways to live in relationship with the broader ecosystem, medicinal knowledge, and food knowledge. Senn Rufus Brown and Genesee Nora Brown note, "Indigenous history, one where intimate relationships are maintained with both animate and inanimate beings, is a history that refuses to forget."[34] Diane Wilson, executive director of Dream of Wild Health, states, "These seeds, which have the original genetic material in them so they are very nutritional, have our history as well. They are the best way to return to a more traditional way of eating."[35] These relationships have been central to Native nations, and as a result, restoring these relationships by returning seeds is vital to the well-being of Native nations today.

The Structural Violence of Seed Colonialism

The rich agriculture that Native nations established in the Mississippi and Missouri river valleys remained quite valuable to the Europeans and Americans as the fur trade gave way to permanent settlement in the region. Over time, however, Euro-American encroachment brought profound changes for the Native peoples of the Midwest and northern plains. Missouri River communities were devastated by disease in the first

half of the nineteenth century as Euro-Americans made more regular trips up the river. The Mandan, Hidatsa, and Arikara peoples were so ravaged by smallpox in the 1830s that they were forced to migrate north and consolidate several villages. Settlers came into conflict with Native nations over access to territory and resources, often resulting in treaty negotiations which ultimately worked to whittle away Native rights to their lands and open these territories to settlement by non-Native Americans. Eventually, treaties to ensure peace or access to land led to treaties creating reservations boundaries. By the end of the nineteenth century, Native people of the region suffered under complete colonial control by the US government. They had been dislocated from their lands, subjected to assimilation programs, and severed from some of their most valuable resources—including their seeds.

While many treaty reservations in the upper Midwest were established within the traditional boundaries of a Native nation's territory, some involved the forced removal of people to new reservations far from their homeland. For example, in the 1830s, Ponca, Pawnee, Iowa, Oto, Sauk, and Fox were removed west of the Mississippi from their homelands and eventually were forced to Oklahoma, all far from the rich agricultural lands they had cultivated. In the 1840s, many Ho-Chunk people were forced from Wisconsin and eventually to Nebraska. Other peoples, such as Anishinaabe and Dakota nations, were forced onto smaller and smaller reservations within their homelands. Regardless, confinement to any reservation still disrupted indigenous agricultural practices. Frequently reservations were located in marginal regions, removed from lands desirable for farming.[36] They restricted the people's freedom to move through and plant in traditional landscapes.

The inability to access the entirety of a Native nation's known landscape through both removal and confinement exacerbated loss of resources, including seed, soil, water, and the wider ecosystems that impacted them. The limited access to and increasing colonization of these resources also restricted the ability of gardeners and seed keepers to pass their knowledge of their food plants and the wider ecosystem that nourished them along to future generations. This process changed both the people and the landscapes. Areas that once fed many peoples with diverse wildlife were settled by Euro-Americans and were plowed under for farms or cities. Rivers were damned and diverted for Euro-American style agriculture. Species that people had depended on dwindled in numbers. Prairies, oak groves, and camas bulb fields suffered because Native people could no longer tend them through cleansing burns or aerating the soil. Without these reciprocal relationships, the land's bounty decreased.

As reservation life became more restrictive in the late nineteenth century, with fewer opportunities to gather wild foods or tend indigenous gardens, Native people came to subsist mainly on rations, changing their diet completely by introducing sugar and wheat flour. Sebastian Braun notes, "The memory of rations and often the starvation and loss of independence that the rations represent is an ever-present backdrop to the relationship between the United States and Indian tribes."[37] Because rations are emblematic of the efforts of federal officials to sever the relationship Native people maintained with their landscape, they also connote the loss of food sovereignty imposed on Native peoples. For agricultural nations, the loss of seed sovereignty followed as well.

On reservations, agents spurred Native people to form new relationships with the land and their food. People were encouraged to farm, but not in their traditional ways. Farming was placed in the hands of men, so the seed keepers, who were women in many communities, got little support for their endeavors.[38] When US government officials implemented the Dawes General Allotment Act in 1887, they assigned 180 acres of land to each family on applicable reservations and the rest was sold to non-Natives as "surplus" land.[39] While allottees did what they could to select fertile lands on the reservation, there was often not enough to go around. Furthermore, allotment dramatically changed the social process of farming. Usually, extended families shared a plot that they worked together. The plots were in fertile soil, often along river bottoms. Preparing the soil, planting, and harvesting were community activities that brought multiple families and generations together. Allotment's emphasis on the nuclear family as a labor unit disrupted wider social relations in place for ages.

Reservation agents disrupted indigenous agriculture in other ways as well. Many reservations employed Euro-American farmers to teach Native men what was touted as more productive agricultural practices. These farmers asked Native people to grow food they had neither grown before nor wanted to eat—like wheat, potatoes, or onions. Buffalo Bird Woman describes leaving food in the fields to rot because the people either did not like to eat the crop or did not know how to use it effectively.[40] Over time, however, these new foods became staples of reservation diets, threatening indigenous seeds with losing their central place in Native food systems. Allotment even slowly whittled down Native farmers' access to land as their allotments were divided among heirs over the course of several generations. Today, many families no longer have enough acreage to farm. Native seed keepers continued to grow their seeds in garden plots, but allotment, non-Native neighbors, and the enforcement of private property prevented them from planting in the most fertile soil each season. They did not have the space to separate varieties of corn, so gardens were less productive and some corn varieties became mixed. While a limited number of Native gardeners were able to protect their most highly valued varieties, over time, limited access to land and the resources needed to practice traditional techniques led to loss of seed diversity.

At the end of the nineteenth century, the federal government did not only target its assimilationist pressures at adults, they also turned their sights on education for Native children. While Christian missionaries had been educating young Natives on reservations for decades, the federal government took up the goal in 1879 by opening the first federal Indian school, Carlisle. The founder, General Richard Pratt whose famous agenda was to "kill the Indian and save the man," believed Native youth needed to be severed from their home communities and only surrounded by Euro-American lifeways until they reached adulthood. To that end, children at boarding schools often did not return home during the summer. Instead they were farmed out to Euro-American families, girls as domestic labor and boys as farm hands. This system of education robbed Native children of their chance to learn from their elders the indigenous knowledge associated with gardening, seed saving, and the wider known landscape.

Boarding schools also profoundly changed Native people's relationship with food. Monica Bodirsky and Jon Johnson note that while the abuses of boarding school have

been carefully researched, few studies explore the specific effects of what they call "food abuse." Many former students are haunted by memories of constant hunger. Students watched teachers and staff eating much more nutritional and higher quality food than they were served—nutritionally empty foods such as white flour, white sugar, lard, and watery cereals.[41] Withholding food or forcing students to eat unappealing or contaminated food was often used as a punishment.[42] These practices have had a negative intergenerational effect on Native people's perceptions of food and diet. Researchers have found connections between food abuse and survivors' current eating patterns (such as eating too quickly, overeating, or hoarding), as well as levels of physical activity, and health status.[43]

Food abuse also negatively impacted Native people's connections with culturally valued foods, undermining their importance while encouraging an antagonistic relationship to food in general. When young people returned from boarding school without the desire to eat their community's foods or the ability to gain the knowledge of how to grow or prepare these foods, indigenous seeds faced neglect as well. In talking about his own Raramuri community, Enrique Salmón succinctly describes the current results for Native people when severed from their interconnected web of food, community, landscape, and health, stating, "a group of people that were once part of a larger and extended population that maintained the landscape are now a tiny segment of a very large population that gets most of its food from 1,500 miles away, eats high fat high sugar diet, is obese, is dying from what is eaten, and no longer maintains a connection to place."[44] As Native people lost access to their traditional seeds and gardening declined in their communities, the rates of obesity and diabetes rose.[45] While this is true of the American population in general, Native communities have been more susceptible to diet-related health discrepancies, in part as a result of their historical trauma. Because reservations are often too small for residents to survive by hunting and gathering, too barren to farm successfully on a large scale, and too distant from urban areas with affordable grocery stores, many Native people have lived with little access to healthy foods for generations.

Eventually, the pressures of assimilation and survival in an emerging global economy presented challenges to being able to garden. Over the course of the twentieth century, Native people became more and more dependent on commodities and store-bought food as they were severed from past ways of making a living and turned to wage labor to survive. Families had to enter the wage labor economy, putting other pressures on the time needed to tend to their gardens. With younger family members whose labor would have been vital to garden production in the past, far from home at boarding schools, many families had to reduce the size and diversity of their gardens or abandon them altogether. Without gardens, many Native people no longer had access to the fresh vegetables they were used to eating. Ongoing resource extraction and industrial development also separated Native people from their land bases, compromising their ability to subsist from them.[46] The same shift away from agrarian lifeways took place all over the United States, causing loss of agricultural knowledge, of food preparation skills, and of seed diversity.[47] For Native people, however, this shift had implications not only for diet and physical health, but also for religious practice, social cohesion, and cultural knowledge transmission.

Even under the challenges imposed by reservation life, some indigenous agriculturalists attempted to keep their seed varieties safe, growing them out year after year, and carefully drying and storing them to preserve the germplasm. Nevertheless, the changing demands of life under colonization made it difficult to pass on the plants and the knowledge surrounding them to future generations. Through the pressures of reservation life, particularly the efforts of Indian agents to force Native people to change their agricultural practices, some indigenous varieties were lost and mixed, and maintaining the varieties that had taken centuries to develop became harder and harder.

During the same period, Euro-American seed breeders and botanists in the Midwest and northern plains were removing indigenous seeds from Native communities. Oscar H. Will, his son George Will, Gilbert L. Wilson, Melvin R. Gilmore, and Volney H. Jones all collected from Native people in the region. Oscar and George Will's Pioneer seed company illustrates the structural violence of collecting indigenous seed for breeding, sale, and profit leading to seed colonialism. Oscar Will came to the Fuller's greenhouse in Bismarck, North Dakota in 1881 to propagate trees. He soon recognized the economic value of the Mandan, Hidatsa, and Arikara agriculture and the hardy vegetable varieties they had developed. Within a few months, Will began to seek seeds from Native people living on the Fort Berthold Reservation. Soon he took over the greenhouse and began his own seed company.

By obtaining indigenous seeds and knowledge of how to breed them from Native seed keepers, Will built a profitable business. He stated in his catalogues that he obtained Nuetta sweet corn, one of his most profitable seed corns, directly from Mandan people. He sold Assiniboine Yellow Corn that he had obtained from an Assiniboine Reserve in Canada. In his catalogue, he noted that Assiniboine people had "raised and acclimated it for over forty years." He also acquired squash seeds from the Arikara at Fort Berthold and the Winnebago of Nebraska.[48] In 1886, a Hidatsa man named Son of Star gave Will a bag of beans during an early visit to the reservation. In his catalogue, he claimed these were "the most profitable beans that can be raised."[49] These beans would become the Great Northern Beans that one can find in any American supermarket today. Will even obtained sugar melon seeds from the Arikara and began to market them as hardy, cold-resistant, and early.[50]

Interestingly, from the early 1880s until 1959, Oscar H. Will & Co.'s seed catalogues celebrated the agricultural contributions of the Native farmers in both their descriptions of seeds and their images. At the same time, true to colonial narratives of conquest, the catalogues construct the acquisition of seed corn from indigenous people as either a gift or a discovery. In 1914, Will's company introduced the "Pioneer Indian Collection," containing one package of squash seeds, two of corn, and two of beans grown from seeds all obtained from one Mandan woman named Scattered Corn Woman. In the description for the collection, the company acknowledges that Mandan people have been growing hardy varieties of corn and vegetables for at least two hundred years, "carefully selecting their seed for both earliness and drouth resistance, and exercising great care to keep their several varieties of corn separate."[51] Although Scattered Corn Woman is acknowledged as the person who gave Will the original seeds and thus is represented as the source of the sophisticated seed breeding

knowledge of her people, there is no sense of responsibility to the Missouri River peoples or individual Native farmers as the people who bred these varieties.

While the company depended on Native agriculture for its success, it also represented Native farming as in decline. For example, Running Wolf, self-identified as an Arikara Indian farmer, wrote to Will's Pioneer Seed House in North Dakota to tell him that he and his wife planted seeds from Pioneer and some from a company further south. He stated that only the Pioneer seeds sprouted and grew because it had been a bad spring and only the hardiest seeds would grow. He closed by stating, "My people have farmed in Dakota for three hundred years or more and know how to raise things here."[52] Will probably printed this letter to demonstrate his seeds were so reliable that even an Arikara family turned to Will's Seed House to obtain seeds suitable for their gardens. Nevertheless, by reminding the company that his people were the original American farmers, that they continue to farm, and that their traditional knowledge of agriculture remains valuable, Running Wolf subtly undermines the stereotype that Native agriculturalists lacked sophistication.

Overwhelmingly, however, the primary message of the catalogues was that Will, the pioneer seed breeder, had saved indigenous seed from destruction by transforming it from a useless novelty into a profitable resource. In fact, in describing the Pioneer Indian Collection in a later catalogue, Will notes that his firm has "long been interested in the remnants of this agriculture and we have taken over many of the Indian varieties to the lasting advantage of Northwest farmers."[53] He constructed the varieties as likely to be lost without the attention of Euro-American breeders. His narrative emerges from the settler-colonial ideology, a system of dispossession that negates indigenous autonomy in relation to their landscape and the resources it contains so settlers can claim it for themselves.[54]

Indigenous seeds have been threatened by the colonization of Native landscapes, peoples, and ultimately the seeds themselves. Like the colonization of land and people, colonization of seeds has involved viewing seeds as a resource that can be appropriated. One element in the colonial endeavor of naming and mapping the landscape, for example, is classifying seeds based on Euro-American categories, with the same end of gaining control. Likewise, to remove seeds from their home communities, breed them, and ultimately, to remove genetic material with the goal of producing a more profitable resource, parallels the other colonial forms of resource extraction and theft. Moreover, based on the assumption that indigenous seeds, like indigenous lands or indigenous children, are not able to reach their full potential in the hands of indigenous caretakers, seed colonization acts as a parallel form of assimilation. This assumption has justified the colonial control over not only people and land, but their seeds as well.

Seed Autonomy

While non-Native seed breeders built their businesses, scientists built their careers, and geneticists built their stock using Native seeds, Native people were fighting to keep their remaining seeds healthy. Recently, as Native peoples have begun working towards decolonization of their lands, resources, and lives, food sovereignty programs

are making the return and preservation of these remaining indigenous seed varieties part of their mission. As Ella Robertson, a Sisseton Wahpeton gardener, states, "We hold that knowledge of a pure food source in our Indigenous seeds. We need to protect that knowledge, share our seeds, and continue on the tradition of growing our own foods."[55] Seeds have profound cultural, historical, and religious value for a community and also benefit the health of the community and wider ecosystem. Growing seeds in situ expands genetic diversity as the seeds adapt to their local ecology. Moreover, Native people have the knowledge to care for seeds responsibly, considering them to be their relatives, ancestors, and even sacred beings. The ability to care for and protect seeds in ways meaningful to the community moves beyond seed sovereignty: seed autonomy emphasizes Native peoples' ability to renew autonomous relationships with their seeds and in turn to revive autonomous food systems. To recognize seeds as autonomous acknowledges seeds as living beings with their own ability to impact others[56] and implies that instead of controlling seeds, people must build responsible reciprocal relationships with them.

To reclaim seeds, Native nations are supporting seed keepers who have sustained seeds in their communities for generations and are looking for the seeds that were taken and stored in seed banks and even museum vaults. The process brings communities face-to-face with their agricultural history and builds stronger, healthier communities through the act of revitalizing both that history and the plants themselves. Community gardens encourage people to come together, but more specifically, they encourage people of different generations to interact. In indigenous communities where traditional seeds are being planted, they create a space for elders to share their knowledge, not just of agricultural practices, but the history, ecological knowledge, and religious understandings also connected to these plants. Growing rejuvenates the plant, the practice, and the knowledge while building relationships between generations. Narratives associated with seeds may be historical, such as how they were carried during removal, or religious, such as which type of corn is used for a particular ceremony. Younger generations learn the value of being embedded in the kin relationships of their own family, the wider community, and the ecosystem.

Being in charge of their own seeds also helps Native people to provide culturally appropriate and nutritious foods for families who might find it challenging to attain fresh produce or foods vital to certain ceremonies. Many indigenous food sovereignty programs have missions that address the health and well-being of the community. Minneapolis, for example, is home to the Dream of Wild Health, an urban farm serving indigenous gardeners of the Twin Cities. Their website states that their mission is to "restore health and well-being in the Native community by recovering knowledge of and access to healthy indigenous foods, medicines and lifeways" and "to sharing our knowledge, resources and skills with others in an effort to reduce poverty, improve health and nutrition, and reconnect people and plants in a reciprocal relationship."[57] The program also prioritizes preserving seeds' viability and sharing them with Native families and nations.[58] The White Earth Land Recovery Project on the White Earth Reservation has a program to access and plant indigenous seeds in the effort to revitalize the germplasm, with a similar mission of creating healthier

communities through gardening and providing access to indigenous foods.[59] These gardening programs work to increase gardening and food preservation education in the community and to improve the health/wellness of the community by encouraging the community to participate in food production.

Research increasingly demonstrates that not only is the act of gardening healthy for individuals and communities, but that it matters what you grow and eat. While consuming fruits and vegetables is better than eating foods high in fat and sugar, studies are beginning to show that an indigenous diet is even better.[60] For example, indigenous corn varieties are higher in nutritional content including protein, lower in starch, and richer in minerals than their more domesticated cousins.[61] As Menominee forest development forester Jeff Grignon put it in an interview with the Menominee Sustainability Leadership Cohort, "taking the wildness from a plant takes away what is medicinally good for the human body."[62]

Caring for these varieties and growing them in communities today may be important not only for human health but for the health of the wider ecosystems as well. As agriculture becomes more industrial, we are losing genetic diversity in our food supply. Many of the indigenous seeds held in seed banks are not grown often and when they are, it is in a tightly controlled environment. Bringing them home to grow in response to variable climates, pests, and predations, but also to be in the care of the communities who originally grew them, brings resiliency to the seeds and diversity to the germplasm of the variety. For a number of reasons, it is important that these varieties have been maintained even as agro-ecological diversity has been declining. Native agriculturalists across the Americas used their ingenuity in breeding seeds to develop varieties that would overcome the environmental obstacles they encountered. These beneficial characteristics are still important today, but they must be grown in situ so they have the opportunity to adapt to new environmental changes.

These seeds could be central to revitalizing sustainable agriculture practices. While agribusiness tends to favor a "one-seed-fits-all-places" model, Native communities' concern with local conditions and integration into the landscape would be more likely to lead to a better match of seed to local conditions. Not only does this increase diversity, it also is likely to make agriculture more productive, allowing for the supply of cultural needs as well as the potential for greater economic self-sufficiency. Utilizing such knowledge potentially lessens the need for fertilizers or other pollutants that come in with industrial agricultural practices, impacting not only agriculture, but also the health of the wider ecosystem needed to support hunting, fishing, and even human health.

Recognizing the kinship between people and seeds and bringing them home to be cared for is powerful. Many Native people have found that rejuvenating those relationships improves the health of the community in both body and spirit. As Shannon Martin, a seed keeper from the Saginaw Chippewa Indian Tribe, stated, "There will be a spiritual awakening when seeds come home, individually and as a community . . . We listen to our blood memory to understand what our ancestors need to get them back to the earth. There are parallels with these seeds. We want all the separate parts back to make our ancestors complete."[63] By bolstering their community-based food systems,

Native nations are attempting to reverse the disconnections from traditional lands and diets created by removal, poor federal land management, and assimilation policies that imposed Euro-American dietary habits. This process is benefiting the health of Native people and communities, the ecosystem, and the genetic diversity of the entire food system.

The Potentials and Limitations of Seed Repatriation

As the history of Oscar Will's company demonstrates, valuable seeds have been taken from Native people for generations with no compensation and rarely any recognition. Many of these seeds survive today in seed banks. Currently an important shift is taking place towards collaborative conservation, one that privileges a community's relationship with indigenous seeds.[64] While this movement recognizes the primary relationship that indigenous peoples globally have with their seeds, seed colonialism continues nonetheless. Agribusiness is claiming ownership over plant genetic material without listening to Native perspectives; industrial seed conglomerates attempt seed sovereignty by patenting seed genetic material and seeking to restrict the use of the resulting seeds. Despite these efforts, seeds are independent living beings that do not allow themselves to be trapped in this way, but nevertheless deserve the reciprocal support of their Native seed keepers. Repatriation is one path towards this reunification.

Recent debates over the patenting of genetic material have created a new urgency for establishing criteria for the treatment of indigenous seeds. Modern agribusiness has conceptualized seeds as inputs: not living entities, but a means of producing capital. Even more recently, genetic engineers have encouraged agriculture to view seeds as technology, as tiny machines that can be built and repaired using mechanical techniques. USDA seed banks already provide their seed to the public, including agribusiness, which can then use these seeds to extract genetic material. Although Native people can also access them, including their indigenous varieties, with no say in how the seeds in the bank are treated, they are unable to safeguard Native varieties of great cultural, social, economic, and religious value from culturally inappropriate uses.

The perspectives of Native peoples who historically first bred these seeds must be considered. A repatriation initiative would work to ease access to seeds remaining in seed banks and to articulate what responsible care would entail. One challenge is the difficulty of tracing the cultural affiliation of seeds because seeds traveled and were gifted between peoples over time and also because the ethnic affiliation of a particular seed is not always clear from the available accessions data. A repatriation initiative would put the responsibility on the seed bank to share acquisition information with communities affiliated with the seed, providing funding for historical research to establish the connections. Instead of determining specific tribal affiliation, seed banks would return seeds to people who claimed them and who were willing to follow the guidelines for their care. The initiative would prioritize recognizing Native stewardship of seeds by partnering with Native communities to design best practices for repatriation

and for care of seeds and to make sure enough seed is grown out and stored for the continued use of communities.

Furthermore, if the USDA collaborated with Native seed keepers to create repatriation guidelines, this would be a positive step towards reconciliation concerning assimilationist farming and land use policies. As part of the federal government, the USDA has a trust responsibility to repair the damage federal policies have inflicted on Native health, ecosystems, and agricultural practices. The repatriation of seeds would help communities rebuild the autonomous relationship they had developed with their seeds over the course of many generations. It would be a part of putting control back into the hands of Native people. There are four models that could help to begin the conversation—the Native American Graves Protection and Repatriation Act (NAGPRA), the Protocols for Native American Archival Materials, open source seed networks, and the Heritage Seed for Sustainable Lifeways project.

NAGPRA is a good starting place because it has created guidelines for repatriating human remains, funerary objects, sacred objects, and objects of cultural patrimony from any institution that receives federal funds, instead of depending on each institution to develop its own rules.[65] Currently seeds can potentially be repatriated if they fall under one of these categories and are held in the specific types of institutions covered by the act, but these institutions, mainly museums, do not preserve seeds in an environment meant to keep them viable. Nevertheless, NAGPRA provides a model applicable to creating a general set of mechanisms for repatriating seeds. Like NAGPRA, seed repatriation would require banks to trace the history of the seeds they hold, which requires funding to create inventories and disseminate this knowledge to Native nations. Such a process could build bridges between seed banks and Native seed keepers who would travel to the seed bank and work to bring seeds home. At the same time, this model raises concerns. Some seeds are affiliated with multiple nations, and no group should be disenfranchised. Furthermore, seeds are living beings, not finite objects. It would not be possible to repatriate all seeds and control them in one place. Seeds have already reproduced in many places and they need to be shared to be healthy.

If seeds truly cannot be contained because they reproduce themselves in ways over which people have little control, another model is to provide access to seeds through an open source seed network, as Jack Kloppenburg has suggested. This network allows seeds to be shared and thus opens access, but also protects seeds because those who put their seeds on the network are able to restrict their use.[66] Native people could access and share seeds while developing and enforcing a protocol for the use of each seed, ensuring that their seeds are not used inappropriately. One purpose of open source seed networks, for example, is to ensure that seed germplasm cannot be used in GMO production and become patented. At the same time, because it does not protect seeds from use by people in the network, some system would be required to ensure that people would not put seeds in the network that Native peoples have decided to keep from public dissemination. Kloppenburg argues, however, that indigenous communities that have accepted the principle of privatization tend to be more prone to dispossession; ironically, therefore, these communities must struggle harder in their

efforts to attain seed sovereignty.[67] Perhaps sharing seeds would feel less risky if they could restrict their use.

In 2006, nineteen archivists (fifteen of whom were Native American, First Nations, or Aboriginal peoples) met to compose the Protocols for Native American Archival Materials.[68] This document calls for archives to partner with Native nations to develop guidelines for repatriation and/or use of Native archival materials. Years of institutionalized hegemony have led to "an arrogance of exclusively deciding what is or is not 'cultural patrimony'. . . due to judgements that demean cultural differences."[69] The archivists wrote these protocols with the goal of building respect between non-Native institutions and Native Peoples in order to develop reciprocal collaborations and shared stewardship of collections.[70] This system privileges Native recommendations, as well as Native mechanisms for caring for their archival materials, and includes repatriating items to Native repositories when possible.

Native seed keepers have their own guidelines for caring for seeds and by adopting Native guided protocols, seed banks (like archives) could build positive relationships with Native people in relation to materials removed from their communities. Native communities are also developing their own seed libraries. For example, the White Earth Land Recovery Project is currently upgrading its storage space to be able to continue bringing seeds home. Creating protocols to guide a nationwide seed repatriation effort could also include funding for Native nations to establish their own seed storage facilities.

The current Heritage Seeds for Sustainable Lifeways project at the University of Michigan provides a model for this kind of partnership among archives and Native nations in action. Representatives from the Matthaei Botanical Gardens, Nichols Arboretum, the Museum of Anthropological Archeology, the Anishinaabe nation, and USDA plant specialists have come together to "identify key issues and develop protocols to enable sharing of heritage seeds and associated archival information" curated at these institutions.[71] The project focuses on developing a partnership between each of these entities in order to find ways to use these collections and the museums' resources to promote Native sustainable lifeways through activities like sharing knowledge and seed. The Heritage Seed project's website describes their work "as a model for ways to create partnerships between universities and tribal communities."[72] They are beginning the process by repatriating one seed to one nation, which has involved months of collaborative conversation.

One element common to all four models is the importance of listening. Any repatriation initiative must involve the guidance of Native seed keepers. For a collaboration to succeed, non-Natives must understand how to listen and respond. This is more difficult than perhaps we realize, because as Wendy Hui Kyong Chun points out, "more often than not, we assume we know how to listen."[73] Taiaiake Alfred also emphasizes listening in his vision of decolonizing Native relationships with their landscapes, stating that if non-Native people are willing to listen, they will discover "an alternative to the settler society by inviting them to share our vision of respect and peaceful co-existence."[74] Without listening, seed repatriation will prove to be much more challenging, but some entities are more willing to listen than others.

Not everyone wants to listen at the first suggestion of repatriation initiatives. In response to NAGPRA, archaeologist Clement Meighan famously argued that repatriating human remains and cultural items was equivalent to burning historical documents.[75] Taylor Genovese responds that this is a prime example of the hegemonic system of thought that values scientific advancement over all else with little or no regard for indigenous worldviews.[76] Agribusiness is currently dominated by this system of thought. Repatriating seeds could pose a steep learning curve for industrial agriculture, but museums, archaeologists, and developers eventually learned to communicate and compromise when presented with NAGPRA. Arguably, one of the most powerful accomplishments of NAGPRA was to foster a relationship of responsible reciprocity towards human remains and sacred objects and towards the communities that they were connected to. Many scientists saw human remains, sacred entities, and cultural items as nothing more than objects of study before the act. The same is currently true for seeds.

Almost one hundred years ago, George F. Will wrote "the time will surely come when the agriculturalists of the Northern Great Plains will pay fitting tribute to their Indian predecessors for their agricultural accomplishments."[77] Clearly, when industrial agriculture has lost sight of its roots in indigenous agriculture and come to value yield over the maintenance of genetic diversity, that time needs to be now. Imagine how the idea of seeds as living entities embedded in the communities that care for them could shift dominant thought, changing our food system and agro-ecosystem. If non-Native people could listen to Native seed keepers, they might move towards recognizing seeds as ancestors and archives, instead of inputs in the industrial machine that has become agriculture. If they could recognize seeds as the living entities deserving of care and respect that Native people know them to be, perhaps the repatriation of Native seeds could spur a much-needed indigenous guided revolution in agriculture.

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